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# Reports Show How Railroads Lead in Steel Consumption

*Returns from 106 Steel Producers, Allocating Distribution of 36,157,095 Tons, Indicate Clearly How Railroads' Gains in 1929 Outstripped Those of Automotive Industry*

EXAMINATION of the mass of detailed reports, from which IRON TRADE REVIEW'S annual analysis of finished rolled steel consumption is compiled, shows with convincing clarity that the railroads in 1929 regained their position as the best customer of the steel industry in point of tonnage consumed. The primary figures, as reported to IRON TRADE REVIEW by 106 steel producers, reveal—even more strikingly than the computed totals published on pages 37 to 40 of last week's issue — the consistent and well-defined manner in which railroad consumption of steel products in 1929 exceeded that by the automotive industry. The most noticeable feature in the company reports is the contrast in the degree of consistency of the business placed with steel producers by the railroads and by the automotive industry. With few exceptions, every steel producer who furnished several thousand tons or more of steel to the railroads in 1928, shipped a greater tonnage to them in 1929. On

## Comparison of Steel Consumption, 1928 and 1929

| | RAILROADS | | | | AUTOMOTIVE INDUSTRY | | | |
|---|---|---|---|---|---|---|---|---|
| | Actually Reported 1928 | 1929 | Computed 1928 | Total 1929 | Actually Reported 1928 | 1929 | Computed 1928 | Total 1929 |
| Heavy Rails | 2,184,714 | 2,370,589 | 2,453,433 | 2,557,865 | 77 | 656 | 84 | 709 |
| Light Rails | 1,653 | 4,108 | 1,855 | 4,433 | 4 | 68 | 4 | 73 |
| Track accessories | 848,863 | 959,600 | 953,272 | 1,035,408 | 101 | 79 | 111 | 85 |
| Plates | 770,125 | 1,197,426 | 864,281 | 1,292,023 | 194,852 | 256,394 | 216,285 | 277,264 |
| Structural shapes | 494,936 | 724,998 | 555,419 | 781,283 | 29,027 | 18,691 | 32,219 | 20,212 |
| Bars and shapes under 3-inch, excepting concrete bars | 561,897 | 594,242 | 630,559 | 641,187 | 1,941,072 | 2,482,982 | 2,182,823 | 2,685,097 |
| Concrete bars | 28,284 | 55,271 | 31,735 | 59,637 | ..... | ..... | ..... | ..... |
| Hoops, bands, etc. | 10,119 | 32,463 | 11,354 | 35,027 | 463,638 | 453,237 | 520,665 | 490,030 |
| Black sheets for tinning | 2 | 3 | 3 | 3 | 27,205 | 15,819 | 30,197 | 17,107 |
| All other black plates and sheets, excepting galvanized sheets | 181,216 | 205,304 | 203,324 | 221,523 | 1,657,940 | 1,608,807 | 1,861,866 | 1,739,764 |
| Galvanized sheets | 55,274 | 108,273 | 62,017 | 116,827 | 7,658 | 28,176 | 8,490 | 30,470 |
| Tubing and pipe | 37,778 | 67,417 | 42,387 | 72,743 | 73,689 | 86,320 | 81,794 | 93,346 |
| Wire products | 45,194 | 64,842 | 50,708 | 69,965 | 191,753 | 178,845 | 213,818 | 193,403 |
| Strip steel | 18,698 | 12,106 | 20,979 | 13,062 | 989,690 | 1,180,663 | 1,111,421 | 1,276,769 |
| All other finished steel products | 165,348 | 284,920 | 185,487 | 309,644 | 63,803 | 42,019 | 70,811 | 46,103 |
| Totals | 5,404,101 | 6,681,562 | 6,066,813 | 7,210,630 | 5,640,509 | 6,352,756 | 6,330,588 | 6,870,432 |

## Analysis of Railroad Consumption

COMPUTED TOTALS, GROSS TONS

| | 1928 | 1929 | Change |
|---|---|---|---|
| Heavy rails | 2,453,433 | 2,557,865 | 104,432+ |
| Light rails | 1,855 | 4,433 | 2,578+ |
| Track accessories | 953,272 | 1,035,408 | 82,136+ |
| Plates | 864,281 | 1,292,023 | 427,742+ |
| Structural shapes | 555,419 | 781,283 | 225,864+ |
| Bars, except concrete | 630,559 | 641,187 | 10,628+ |
| Concrete bars | 31,735 | 59,637 | 27,902+ |
| Hoops, bands, etc. | 11,354 | 35,027 | 23,673+ |
| Sheets, except galvanized | 203,327 | 221,526 | 18,199+ |
| Galvanized sheets | 62,017 | 116,827 | 54,810+ |
| Tubes and pipe | 42,387 | 72,743 | 30,356+ |
| Wire products | 50,708 | 69,965 | 19,257+ |
| Strip steel | 20,979 | 13,062* | 7,917— |
| All other finished products | 185,487 | 309,644 | 124,157+ |
| Totals | 6,066,813 | 7,210,630 | 1,143,817+ |

the other hand, of 40 important producers who supplied large tonnages of steel to the automotive industry in 1928, only 20 increased their shipments in 1929, 18 furnished less steel than in the year before, and two held their position unchanged.

This shows that the gain of 1,143,817 tons of steel used by the railroads in 1929 as compared with their 1928 consumption, was distributed consistently to all producers who had participated in the business of the previous year. However, while the automotive industry used 539,844 tons more steel in 1929 than in 1928, this increase benefited only half of the producers serving the industry. As a matter of fact, several important producers who have specialized on steel for automobile use, shipped considerably less steel to the automotive industry in 1929 than in the previous year.

### Gain By Products Consistent

The balanced gains of the railroads also appear impressive in the analysis of consumption by products. It will be noted in the table appearing at the top of this page that the railroads in 1929 consumed a greater tonnage of every rolled steel item except strip steel. In contrast to this, the automotive industry, as shown in the table at the bottom of the page, purchased more plates, bars, galvanized sheets, tubes and pipe and strip steel in 1929 than in 1928, but took less structural shapes, hoops and bands, black plates for tinning, other plates and sheets, and wire products.

The apparent inconsistency of automobile consumption, as reflected in purchases from individual producers of steel and in the consumption by products is due in a large measure to the character of automobile production in 1928 and 1929. It will be remembered that 1928 was an off-year for the Ford Motor Co. Of the 4,358,759 cars and trucks manufactured in the United States that year, only about 19 per cent, or 840,000 represented Ford output. In 1929, when the Ford plants were operating at a high rate, they turned out approximately 2,100,000 cars, or more than 39 per cent of the estimated total of 5,500,000 for the entire country.

This sharp fluctuation in Ford output was responsible for most of the marked shifts of business revealed in steel company reports. As a general statement it may be said that steel producers who served Ford in 1928 and 1929 showed large gains in tonnage shipped to the automotive industry in the latter year, while those who served General Motors and other manufacturers of higher priced cars, either lost tonnage or barely held their own. Ford influence explains why, in the face of an increase in automobile output of 1,000,000 cars, the industry did not outrank the railroads as the largest steel consumer. On the basis of computed figures, the automotive industry in 1928 took 2900 pounds of steel for every car it turned out. In 1929, the comparable figure was 2480 pounds per car. While there are numerous factors to cloud the significance of these averages, still they conform to what might be expected in view of the domination of heavier cars in 1928 and the preponderance of light units in 1929.

### Roads Helped By Car Building

In examining steel consumption from the standpoint of known railroad purchases, the results of IRON TRADE REVIEW'S analysis appear most logical. In 1925, 1926, 1927 and 1928 the construction of freight cars dropped below 100,000 annually, whereas in 1922, 1923 and 1924 it had exceeded that figure by a comfortable margin. In every 100,000 car-year since IRON TRADE REVIEW'S consumption analysis was inaugurated, the railroads have taken about 25 per cent or more of the entire output of finished rolled steel. It is logical, therefore, that in 1929, when car building again mounted to above the 100,000 mark, railroad consumption rose sharply, aided of course by an increased use of rails and track material due to greater activity in the maintenance of way departments.

Possibility of a close race between the two leading consumers was predicted in an editorial in the Dec. 19 issue of IRON TRADE REVIEW, in which the relative significance of a million additional automobiles was contrasted with that of an estimated increase of 140 per cent in car buying and a 50 per cent gain in locomotive purchasing by the railroads of

## Analysis of Automotive Consumption

COMPUTED TOTALS, GROSS TONS

| | 1928 | 1929 | Change |
|---|---|---|---|
| Plates | 216,285 | 277,264 | 60,979+ |
| Structural shapes | 32,219 | 20,212 | 12,007— |
| Bars, except concrete | 2,182,823 | 2,685,097 | 502,274+ |
| Hoops, bands, etc. | 520,665 | 490,030 | 30,635— |
| Black sheets for tinning | 30,197 | 17,107 | 13,090— |
| Other plates and sheets except galvanized | 1,861,866 | 1,739,764 | 122,102— |
| Galvanized sheets | 8,490 | 30,470 | 21,980+ |
| Tubes and pipe | 81,794 | 93,346 | 11,552+ |
| Wire products | 213,818 | 193,403 | 20,415— |
| Strip steel | 1,111,421 | 1,276,769 | 165,384+ |
| All other finished steel products | 71,010 | 46,970 | 24,040— |
| Totals | 6,330,588 | 6,870,432 | 539,844+ |

the country. Survey of consumption since 1922, when statistics were first available shows how easily the railroads can rise to a high point in the use of steel. The average weight of steel per car is greater now than ever before because of the practical elimination of wood except in a few types of cars. Heavier rails, now put down by the roads for main trackage, mean that for a given mileage of track relaid in 1929, considerably more tonnage is required than was needed 10 years ago.

### Automobile Steel More Valuable

The railroads, therefore may be designated as the steel industry's best customer in 1929 in point of tonnage. However, there is another side to the picture, in which the automobile industry appears in a decidedly favorable light. This is in the value of steel consumed.

The railroads buy rails, track accessories and plates aggregating almost five million tons annually, while the automotive industry takes more than five million tons of bars, sheets and strip steel. The railroad steel is considerably cheaper than that used by the automobile builders.

Another sharp contrast in the requirements of the two consumers is reflected in their respective attitudes toward steel as a material of engineering construction. The railroads regard weight as an asset. Automotive engineers consider it a liability. Consequently we have seen few attempts in railroad design to minimize weight by the use of alloy steel, whereas in automobile and aircraft design we witness an intense effort to utilize high strength materials.

This difference in attitude will be reflected more and more as time goes on. Automotive engineers predict the car of the future will be lighter, and if this proves true, the consumption of steel per unit will be reduced.

Considering present consumption in the light of tendencies now apparent, we can summarize the situation by saying that the railroads are and will continue to be the most important consumer of tonnage. The positions of the roads and the automotive industry may be reversed at times, but the former will have the advantage the greater part of the time.

The automotive industry is and will continue to be the best customer of steel in point of value of purchases. It is the premier buyer of the more highly refined and finished materials.

## Semifinished Tonnage Is Excluded

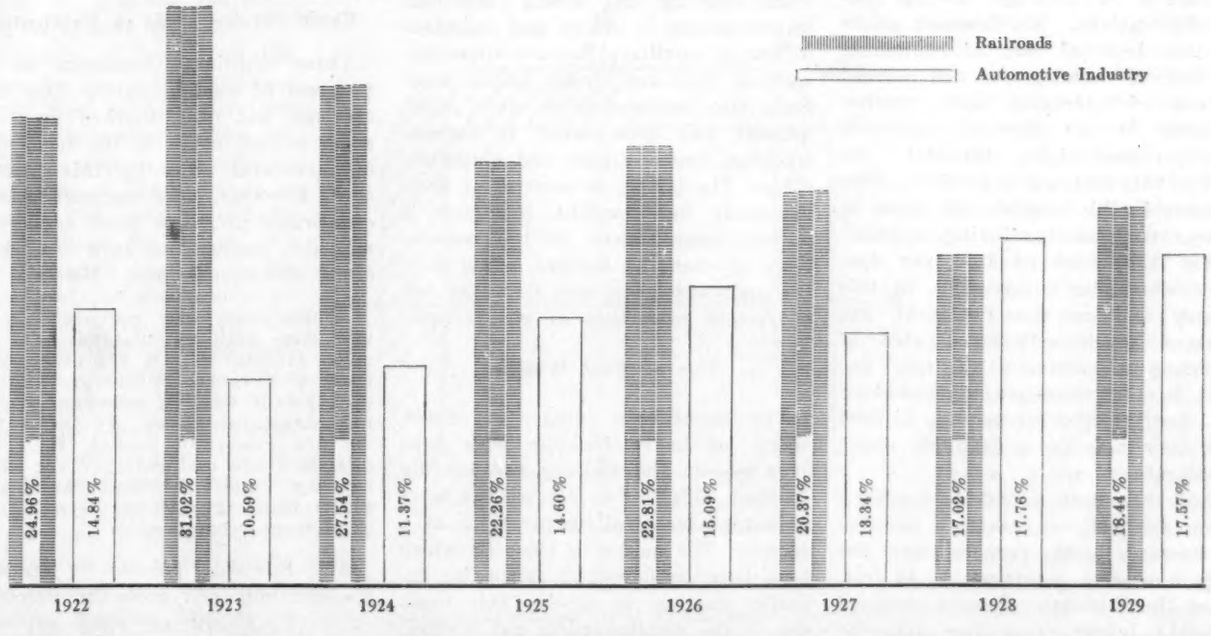
*READERS of* IRON TRADE REVIEW *again are reminded that its annual analysis of finished rolled steel consumption is based upon original reports on the* **destination of finished rolled iron and steel.** *No figures on semifinished steel are included. For this reason,* IRON TRADE REVIEW'S *computed total of* 39,103,200 *gross tons as the production of finished rolled iron and steel in* 1929, *as printed in the table "How Steel Ingots Shrink" on page* 36 *of the Annual issue, will not correspond with the total to be published in the "Annual Statistical Report for* 1929" *by the American Iron and Steel institute.*

*This may be made clear by referring to* 1928 *figures.* IRON TRADE REVIEW *showed* 35,645,201 *gross tons as the computed total of finished rolled iron and steel. The American Iron and Steel institute, on page* 38 *of its* 1929 *report, showed* 37,662,916 *as the total "production of all kinds of finished rolled iron and steel." However, the institute's figure includes wire rods, skelp, forging blooms and billets and perhaps other semifinished items which are subject to conversion losses.*

*The experience of another year with* IRON TRADE REVIEW'S *analysis, coupled with close checking with the institute's figures, may bring refinements which will lead to a formula by which the finished rolled steel can be determined with greater accuracy. In the meantime, it is evident the institute's figure is high and probable that* IRON TRADE REVIEW'S *is too conservative.*

THE EDITORS

## Trend of Railroad and Automotive Consumption In Per Cent



# Authorities Express Opinions on 1929 Engineering Progress

## *Notable Advances Are Made in Blast Furnace Practice, Welding of Structural Steel and Heat Treating Equipment and Operations*

ENGINEERING progress made during 1929 was reviewed and discussed at considerable length on Pages 19-31 of last week's Yearbook of Industry number of IRON TRADE REVIEW. More than 50 authorities in various branches of the iron and steel and metalworking field assisted the editors in pointing out the major developments during the year of record activity. Several good comments were received too late to be included with the opinions of others, but because these statements are of interest, it is not inappropriate to summarize them at this time. The subjects considered include blast furnace practice, welding and heat treating.

### Furnace Size Increases

Blast furnace authorities agree that the most evident tendency in furnace construction and design is one for increased size. Several writers noted this trend in discussing the progress of 1929, thus it is not surprising to find H. A. Brassert, president, H. A. Brassert & Co., Chicago, making similar observations. Mr. Brassert points out that lessened cost of equipment per unit of capacity and the reduced expense of operation make further increases in the size of individual blast furnaces highly desirable. No limit to this increase is in sight. Four furnaces in this country and three in Europe now are producing approximately 1200 tons of iron per day. There are under construction in this country and on the Continent five furnaces which will be capable of producing a nominal 1500 tons per day. In the meantime the construction of still larger furnaces up to 2000 tons daily capacity is definitely under consideration.

There has been a definite tendency within the last two years to increase the diameter of the furnace stock line up to a present maximum of 19 feet, states Mr. Brassert. Results obtained with the larger stock line diameter have been in the direction of lower flue dust production. An interesting European development with respect to the prevention of flue dust is the Stoecker chain filter developed at Bochum, Germany by Dr. Julius Stoecker, superintendent of blast furnaces. This filter consists of a series of ½-inch chains suspended around the periphery of the furnace above the stock line and inside the line of the downtakes. Reports from the Bochum plant indicate a reduction in flue dust production of nearly 50 per cent and a decreased coke rate amounting to 50 pounds per ton of iron and a top temperature lowered by 100 degrees Fahr.

Changes to charging equipment have been characterized by increased size. Revolution of the top and movement of the skip hoist and bells are now habitually interlocked. Automatic filling of the skip tubs and use of automatic weighing coke hoppers is an increasingly usual feature of stock house practice. At several furnace plants automatic devices are being installed to prevent the scale car man from drawing the wrong material. Improvements in design and increases in size of auxiliary furnace apparatus such as iron and cinder ladles, mudguns, etc., continue to be made. Much interest has been taken in tuyeres made of forged copper and aluminum alloy. The latter, on account of their extremely light weight, constitute a radical improvement in the convenience of changing tuyeres, while their life and consequent cost shows an improvement over that of cast copper.

### Use of Fuel Widens

The use of blast furnace gas either singly or in combination with coke oven gas in the melting and heating of steel, bids fair to become the most important technical improvement of a decade. The means of cleaning which have been employed by companies actually starting to develop this practice is the disintegrating gas washer, originally developed in Europe and modified in this country to suit American conditions of practice.

Projects which have been approved within the current year will unquestionably demonstrate not merely the advantage of higher blast temperatures, but of increased economy in the use of gas within the next twelve months, states Mr. Brassert. An extremely important feature of stove design has been the recognition of the importance of high velocity of gas and air when passing through the stove at moderate temperatures and the reduction of this principle of practice. Two sets of stoves have been in operation throughout the current year which embody the principle of maintaining a uniform velocity for gas and air by variation in the area of the checker passages to correspond with the changes in temperature. These stoves have given a better account of themselves with respect to temperatures obtained in units of a given size and with respect to economy of gas than have other stoves in which this consideration has been neglected.

### Rapid Strides Made in Fabrication

Three additional comments on the progress of welding during 1929 were received and each touched upon the rapid strides made in the fabrication of structural steel by this method. J. H. Edwards, chief engineer, American Bridge Co., New York, found considerable headway to have been made along educational lines. He said:

"There has been nothing spectacular done such as outstanding or unusual structures. On the other hand, there is evidence of the growing application of welding processes in joining structural parts. It seems that we are gradually leaving the propaganda stage and entering the investigating and practical application stage being guided by desire to do good work economically."

Mr. Edwards pointed to standard specifications and codes of procedure

(*Concluded on Page* 32)

# Designing Ingot Molds To Reduce Rolling Mill Losses

*By Emil Gathmann*

***President, Gathmann Engineering Co., Baltimore***

INGOT quality is of primary importance in every phase of steel production, since upon it depends the physical quality of the finished product and satisfaction of the user.

In order to appreciate how much the design of a mold influences the quality of the ingot surface, it is well to review what happens when molten metal is teemed into a mold, while it solidifies and the effects of the rolls on the solidified casting. The initial skin solidification of an ingot, which occurs immediately upon contact of the molten ingot metal with the relatively cold walls of a mold, consists of fine crystals. A somewhat different type of dendrites of larger crystallization, having the fine skin crystals as their nucleus, grow into the body of the ingot metal quite rapidly until contact of the mold and ingot is broken.

Strange as it may seem, the mold chamber also has contracted during the initial ingot contraction so that the metal is tightly gripped and the conduction of heat from the ingot to the mold at this period is rapid. In this way the ingot skin is quickly formed. The conduction of heat from the ingot to the mold continues until the mold walls are heated throughout, when the mold chamber is enlarged by expansion of the mold as a whole. The mold then pulls away from the ingot and the complete burden of the weight of the entire mass of metal must be held by the thin skin that solidified during the contraction of the mold chamber. This is what might be called the critical stage in solidification, for unless the mold contour has been properly designed, the surface of the ingot in yielding to the pressure of the metal will be over-stressed and will break, causing bleeding blisters or runouts. The purpose of corrugating a mold chamber is to increase its perimeter and provide more salients, so that the initial skin will solidify quickly and the corrugations will resist the tendency of the skin to tear during solidification. This principle is not a new one and is quite generally used. Fig. 1 shows the first known employment (Mooney patent of 1873).

### Satisfies Surface Requirements

The octagon and dodecagon cross sections (the latter shown in Fig. 2) more nearly meet the requirements for good surface solidification than any other of the old types. They have not been more extensively employed because of the serious loss in tonnage output of the mill due to the necessity of more passes being employed in squaring up an ingot of this type.

In designing the cross section of an ingot, the factors primarily considered are two: The ingot must be free to contract without binding to the mold walls and the salients and corners of the ingot must be of such angular contour that they will not decarburize in the reheating pits. These two requirements are generally recognized and are met in the greater number of designs in use today.

There is another requirement of the greatest importance in the production of good surface in any grade of steel, i. e., the primary sides of the ingot must be relatively narrow and must be in a higher plane than the corner salients of the ingot, so that in the initial deformation in the rolls, the corner salients will receive very little work and the adjacent unworked sides will not be appreciably stretched in a longitudinal direction.

The reason for this is not so obvious unless one remembers that the ingot when placed in the rolls is merely a chill casting having a coarse crystalline structure that lies in planes at right angles to the direction of rolling. Therefore, until the ingot surfaces have all been worked in the rolls and the size of the crystals reduced, no appreciable elongation is permissible. When the ingot is elongated before the rolls have acted on all of its surfaces, open cracks or subskin seams, sometimes both, are present in the bloom. In some products the open cracks can be chipped out, but subskin seams cannot be eliminated by any amount of work. They are frequently not found unless the product is etched and closely examined. Sometimes the material, due to growth of these seams under repeated stress, fails below its elastic limit. Fig. 3 shows a rectangular corrugated design that is in wide use. This design has four inwardly-bellied side walls, which allow of moderate adjustment of the ingot skin during solidification, provid-

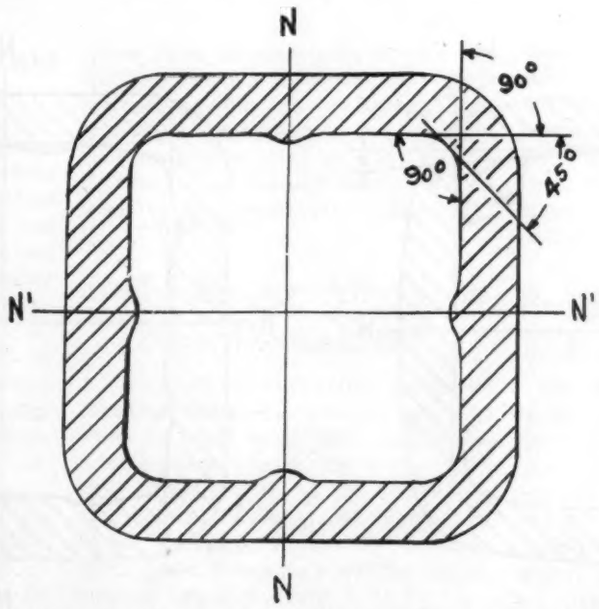
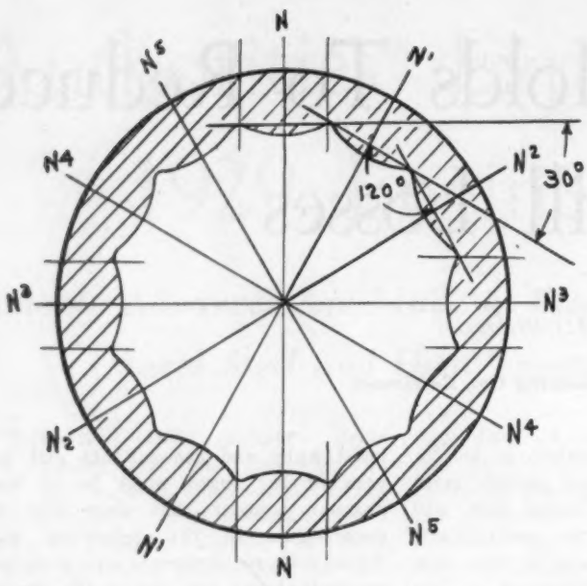



*Fig. 1—Earliest record of a rectangular, corrugated mold chamber. Introduced in* 1873



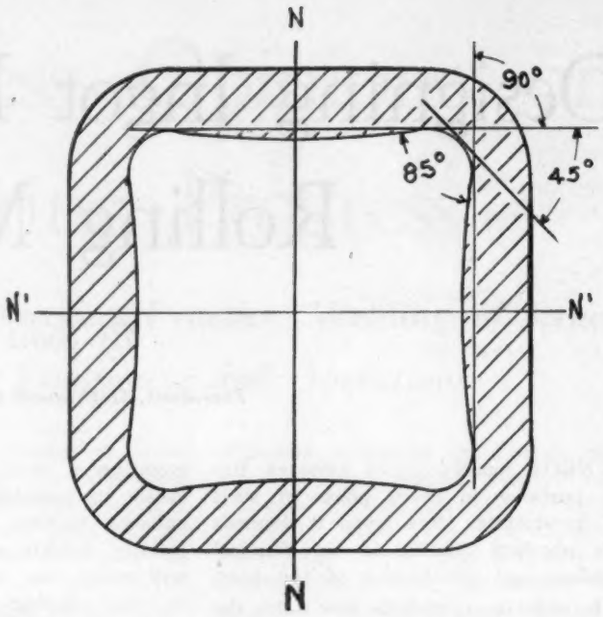




*Fig. 2 (Left)—A round dodecagon corrugate with sharp salients is used widely for special steels. Fig. 3 (Right)—Early type of rectangular corrugate with narrow corners*

ing the rise of the arc is very small. Unless special rolls are provided the sharp corners will frequently overlap in bloomering, causing surface defects.

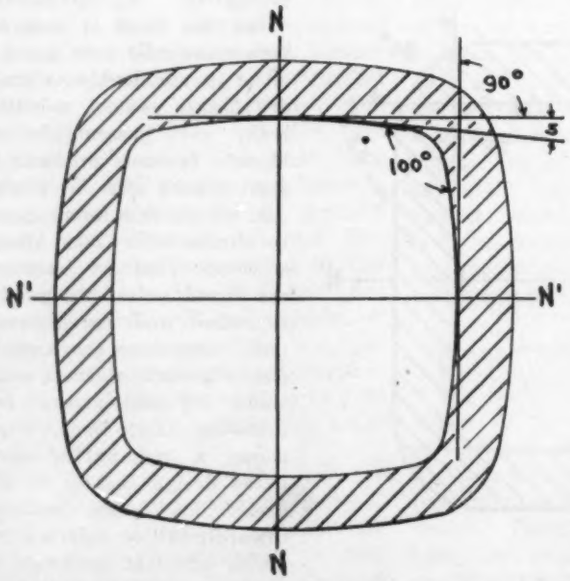
Fig. 4, another widely used design, is the antithesis of Fig. 3. The initial set of the skin is bowed outwardly and cannot adjust itself to the initial contraction and subsequent expansion of the mold chamber during solidification. Numerous shrinkage cracks and incipient stresses are necessarily formed in the skin of such an ingot during solidification, but the corners are broad enough so that there is no danger of decarburizing in the reheating pits or overlapping in mill reduction.

The rippled design shown in Fig. 5 has broad corners that will not lap readily in moderately light rolling passes, but the free sides are seriously stressed during the initial passes. This is caused by the width of the primary sides, which cannot spread in a sidewise direction and must elongate the ingot, overstressing the unworked sides.

### New Types Developed

Figs. 6 and 7 illustrate two cross sections that have come into wide use within the past several months. They were originated by the writer and embody what he considers the necessary features for good surface in both big-end-up and big-end-down tonnage practice, viz., the lines connecting the corners of the mold matrix are so corrugated as to offer no obstruction to free contraction of the metal toward the neutral lines of shrinkage. Due to the corrugation of the secondary corners, the ingot surface is flexible and can give without breaking or cracking during the period of separation of the mold and ingot subsequent to the expansion of the mold. The corners are broad and are not apt to be burned in the reheating pits or lapped when passed through the rolling operations.

The projecting primary sides of an ingot of this type are spread in a direction approximately tangent with the axis of the rolls in the initial passes rather than flowed longitudinal-



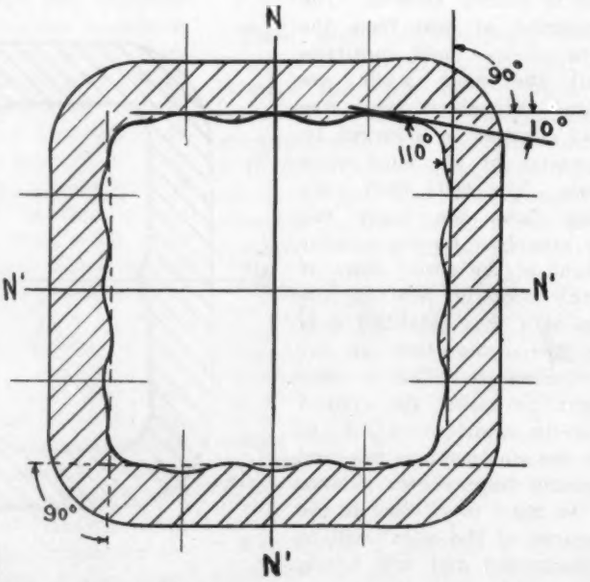




*Fig. 4 (Left)—Good corner construction but design extremely bad. Fig. 5 (Right)—An improvement over the early forms of rectangular corrugates. The primary surfaces are too wide and corners too short. Introduced in* 1917

ly as happens when the primary sides are wide and in substantially the same plane as the corners. The free, unworked adjacent sides are thus not elongated and are deformed only slightly, if at all.

The value of an improvement in the surface quality of ingots is fully appreciated only when one realizes that millions of dollars are lost annually in rejections and chipping costs trying to rectify poor surface caused by improper mold design. It is no longer a matter of opinion but an established fact that the surface of a finished steel product is no better than the surface of the bloom from which it was produced.

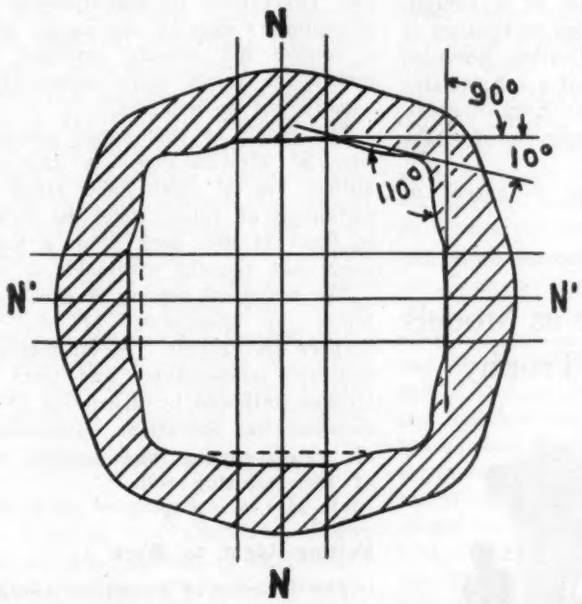
the work of the German committee on wire rope, and tentative test specifications for wire ropes sponsored by the Deutscher Verband fur die Materialsprufugen der Teckink of the Verein Deutscher Ingenieure.

## Gray Iron Group Urges Better Patterns

The Gray Iron institute is distributing a booklet, "Pointing the Way to Better Castings," describing the savings to be made through modern pattern equipment and stressing the place of patterns in the foundry equipment program. The publication urges close co-operation between the castings buyer and the foundry. It is pointed out that modern patterns constitute an investment in good production equipment just as much as do modern lathes, modern conveying systems, or other production adjuncts.

This work involved the identification of the different types of inclusions formed by varying the additions of each deoxidizer and was found to be valuable in the determination of the degree of deoxidation with each element. It is believed that the desired inclusions should have a low melting point and surface tension so as to readily flux with one another. They will then form large particles and on rising to the slag surface, be eliminated from the metal bath.

Work of this nature has indicated that aluminum reacts with iron oxide to a greater degree than silicon, and silicon more than manganese. With this latter point in mind it can be seen that a large number of difficult problems present themselves in the use of such binary deoxidizing alloys as manganese-silicon, silicon-aluminum, and manganese-aluminum. Varying degree grades of these three alloys are being manufactured and used as deoxidizers at the present time.



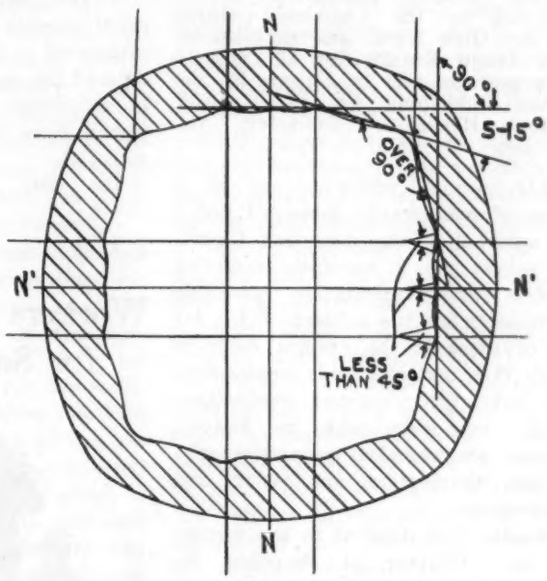




*Fig. 6 (Left)—This cross section of ingot solidifies without stress and rolls without overlapping at the salients. Fig. 7 (Right)—Another variation of the Gathmann principle having rippled primary faces. The ingot types of both Fig. 6 and Fig. 7 were patented in July,* 1929

## Report Covers Wire Rope Research Meeting

The proceedings of the third conference on wire rope research held under the auspices of the American Society of Mechanical Engineers and containing papers on the use and abuse that wire rope receives in many industries, have been published by the society and now are ready for distribution. The subjects discussed in the report include the use of cables for elevators, cableways, excavating machinery, logging, generating plants, and other fields in which this important element is a necessary part.

The research committee of the society is now considering organization of a special committee to conduct an exhaustive investigation of the wire rope problem. The conference report includes a brief abstract of the paper by Dr. R. Woernle describing

## Study Binary Alloys as Steel Deoxidizers

Formation of nonmetallic inclusions resulting from the reaction of iron oxide in liquid steel with certain deoxidizing elements is one of the problems being studied at the Pittsburgh experiment station of the bureau of mines, in co-operation with Carnegie Institute of Technology and the metallurgical advisory board.

Materials first studied were the most commonly used single deoxidizers such as manganese, aluminum and silicon.

## Progress Report on Gas Research Published

"A Year's Contribution of Research in the Application of Heat in Industry," is the title under which a progress report of the committee on industrial gas research is published in a booklet by the American Gas association. Research activities have extended into a diversified field including forging, decarburization of steel, brass melting, bright annealing, core baking, ceramics, and stereotype melting.

# New Books Worth Reading

SCIENCE ECONOMICS BUSINESS

### Tin in Various Phases

*Tin, Its Mining, Production, Technology and Applications*, by C. L. Mantell, cloth, 366 pages, 6 x 9 inches, published by the Chemical Catalog Co. Inc., New York, and supplied by IRON TRADE REVIEW for $7 plus 15 cents postage, and in Europe by the Penton Publishing Co. Ltd., 416-17 Caxton House, Westminster, for 35s, net.

This volume, which is one of a series of monographs arranged under the auspices of the American Chemical society, is a carefully compiled treatise of authoritative available information on the subject of tin for use of those in the various fields in which this material finds application. The subject is covered comprehensively and deals with its history, physical and chemical properties, production, distribution, application, and consumption.

Chapter I is devoted to the history of tin. Chapter II describes its physical and chemical properties, and Chapter III relates to production, distribution and consumption. Chapters IV, V, and VI cover tin ores and ore deposits, mining and ore dressing, smelting and metallurgy, respectively. Gaseous reduction and electrolytic refining are described in Chapters VII and VIII while Chapters IX and X are devoted to plating and alloys of tin.

Hot-dipped coatings is the subject of Chapter XI and data on foil and collapsible tubes are given in Chapter XII. Compounds of tin and corrosion respectively are covered in Chapters XIII and XIV, while corrosion of tin plate by food products and secondary tin are topics of Chapters XV and XVI. Detinning of tin plate scrap is described in Chapter XVII and the volume closes with Chapter XVIII on analytical methods.

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### How the English Make Rolls

*Manufacture of Chilled Iron Rolls*, by Archibald Allison; cloth 112 pages, 5½ x 8½ inches; published by Isaac Pitman & Sons. Ltd., 2 West Forty-fifth street, New York; supplied by IRON TRADE REVIEW for $2.50 plus 15 cents for postage.

A systematic record of a complicated process in ferrous technology is attempted in this publication. Recorded data of the operation of a roll foundry in connection with an English steelworks have been drawn on for the material.

The data, covering a period of about five years, resulted from personal control by the author of the operation of this foundry. In this way supervision of manufacture and recording of data by one person gives a control not usually obtained and makes the result more reliable than usually can be attained.

The result of this happy combination of circumstances is that the author has at first hand much information of value, which he is able to treat in this book from a standpoint not usually attainable.

The historical setting is given, followed by discussion of the air furnace and cupola. Metal mixtures, analysis, temperatures and tests are treated, followed by discussion of the metallurgical operations, manipulation of metal, casting and various tests of the resulting rolls.

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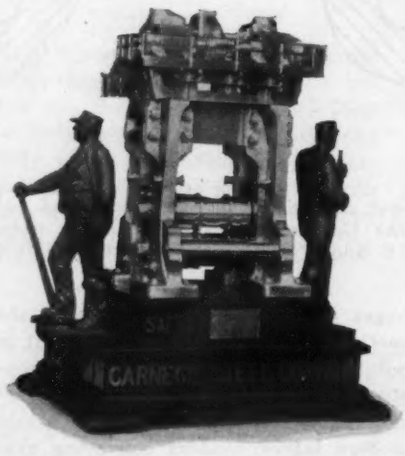
### Putting Light to Work

*The Practice of Spectrum Analysis;* paper, 6¼ x 9¾ inches, 38 pages, published by Adam Hilger Ltd., London, England, and supplied by IRON TRADE REVIEW, for 50 cents plus 15 cents postage, and in Europe by the Penton Publishing Co. Ltd., 416-17 Caxton House, London, for 1s 6d.

This is the fourth edition of this work, compiled by F. Twyman and contributed to by E. N. Andrade, S. J. Lewis, D. M. Smith, S. Barratt, A. A. Fitch and J. W. Ryde, who have done much to advance spectrographic analysis. Chapter I deals with types of problems to which spectrum analysis is applicable while Chapter II describes spectrometers and spectrographs for spectrum analysis. Ways and means of exciting emission spectra are presented in detail in Chapter II.

Chapter IV relates to taking spectrograms, measuring wavelengths and identifying elements. Chapter V discusses quantitative spectrum analysis and Chapter VI deals with the various types of spectrum. An appendix gives data on the determination of wavelengths by interpolation.

## Workers Serve as Models for Safety Trophy



THE Carnegie Steel Co.'s ninth annual safety trophy, for competition between its plants in 1930, is a miniature rolling mill made of solid silver, flanked by statuettes of two steel rollers. A roller at the company's Farrell, Pa. plant, and one at its Clairton, Pa. plant served as models. These figures are mounted on a bronze base, which carries the silver plates on which will be engraved the name of the winning plant, monthly, and a more elaborate plate for the name of the plant that wins it for all time at the end of the year's contest.

# Experiments Reduce Voltage-Recovery Interval on Welding Machines

## *Elimination of Internal Transformer Effects Quicker Recovery of Full Open-Circuit Voltage from Short Circuit on Direct-Current Machines*

DEVELOPMENT of arc welding both in design of equipment and application of the process has been rapid and many questions which were real problems a few years ago now have been solved. However, one baffling question has been how to decrease the time for voltage recovery in direct-current welding machines. By this is meant the length of time for the welding machine to recover full open-circuit voltage from short circuit. The quicker this recovery the more nearly will voltage changes in the machine follow the voltage changes of the arc and the net result is a more easily operating arc which means more work with less fatigue and effort on the part of the operator.

### Solution Is Devised

Research laboratories of the Lincoln Electric Co., Cleveland, began work on this question in 1924 and a solution now appears as a commercial possibility in the not too distant future. In fact, experiments already performed show that this time of recovery can be reduced to a minimum.

In all single operator welding machines now available, some method must be provided for reducing the open-circuit voltage of the machine to the varying voltage demanded by the arc. This may be accomplished by utilizing armature reaction, varying series field or any one of a dozen or so other methods. In effect, however, the results are similar; one magnetic field of some kind opposes another. When two magnetic fields are in proximity a transformer effect is produced with the well-known transformer characteristics, whereby if the current in one of the windings is changed, a voltage is immediately set up in the other winding and this other winding will have a current flow in it as a result of the induced voltage.

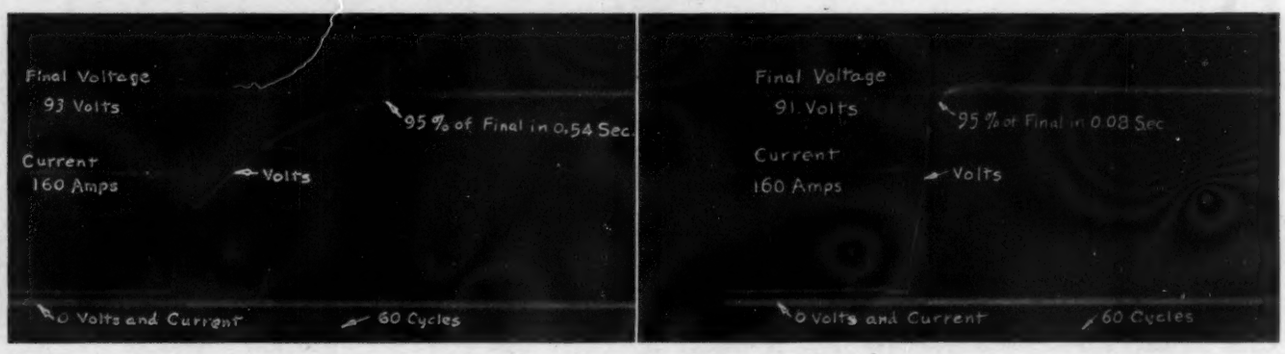
It is a law of electric circuits that the induced current always flows in such a way as to nullify the magnetic effect of the inducing or original current in the first winding. As a result of this action, ordinarily the welding machine will not adjust itself to the changes in the voltage of the arc as quickly as it can if the internal transformer action were eliminated. It should be understood that the changes both in the voltage of the arc and also the machine are extremely rapid, taking place in fractions of a second. Consequently, for an intelligent study of such changes it is necessary to use an oscillograph.

The oscillograph to the left in the accompanying illustration shows the length of time consumed in recovery of voltage from 0 or short circuit to 95 per cent of final voltage in a standard type of welding machine. The recovery shown is rapid and much shorter than with the average type of machine. Various devices have been and are used to overcome the effect of this transformer action in the arc circuit. It is easily appreciated that if the nullification of this transformer effect can be accomplished inside the machine, results would be materially better.

Experiments have shown the possibility of inserting in the arc circuit a device which will produce effects similar to those produced in the machine by the transformer action of the double winding on the pole pieces, except that the effect will be in the opposite direction, thus nullifying the original transformer action. The oscillograph to the right in the accompanying illustration shows the results where an experimental device, such as described above, was used, and it will be noted that the length of time for the voltage to rise from 0 or short circuit to 95 per cent of its final voltage is much reduced.

### Current Often Excessive

Ordinarily when a welding machine is short circuited the instantaneous short circuit current immediately will rise to a considerably higher value than is desired for the best welding operation. In ordinary welding with the metallic arc, the machine is being short circuited intermittently from perhaps 15 to 30 times per second by globules of molten metal touching both




*(Left) Interval of voltage recovery from short circuit to 95 per cent of final voltage on a standard type of welding machine. (Right) Interval for the same voltage recovery after installation of the experimental device*

the electrode and the work. These peaks of current occurring at short circuit cause higher heat loss in these molten globules than is desirable, causing the globules to boil or explode. The welding operator calls this "spatter."

By nullification of the transformer effect the overshooting of the current at the time of making a short circuit is reduced and experiments show, made almost zero.

## Win Apprentice Contest

Ronald Eyrich, apprentice employed by the Allis-Chalmers Mfg. Co. won first place in the annual drafting contest for apprentices recently conducted by the Milwaukee branch of the National Metal Trades association. Second place was won by Arthur Nolde, Falk Corp. and third place by Edgar Sundby, Nordberg Mfg. Co. Honorable mention was given to Harry Zarek, Allis-Chalmers company, and to Bernard Schneider, Chain Belt Co. The judges of the contest were E. H. Bruce, Kearney & Trecker Corp.; M. Smith-Peterson, Nordberg company, and F. Schmidt, Allis-Chalmers company.

## Mining Congress Plans Coal Exposition

The manufacturers division of the American Mining congress will hold its seventh annual convention and national exposition of coal mining machinery, equipment and supplies in Cincinnati May 5-10. Preparations for the show will be started in Pittsburgh Jan. 11, when coal officials from many sections of the country are to meet. P. C. Thomas, general manager of mines, the Koppers Co. Inc., Pittsburgh, will be in charge.

## Electrical Engineers To Hold Winter Meeting

New developments and studies in electrical engineering will come up for discussion at the winter convention of the American Institute of Electrical Engineers, to be held in New York, Jan. 27-31, with headquarters at the Engineering Societies building. A diversified technical program has been arranged and includes a session on Jan. 30 devoted to electric welding.

The following papers will be presented at that session: "Cathode Energy of the Iron Arc," by G. E. Doan, Lehigh university, Bethlehem, Pa.; "Calorimetric Study of the Arc," by P. P. Alexander, General Electric Co., Lynn, Mass.; "Resistance Welding," by B. T. Mottinger, Federal Machine & Welder Co., Warren, O.; "Electrically Welded Structures Under Dynamic Stress," by Morris Stone and J. G. Ritter, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; and "Welding with the Carbon Arc," by J. C. Lincoln, Lincoln Electric Co., Cleveland. F. L. Hutchinson, 33 West Thirty-ninth street, New York, is secretary of the institute.

## Plan Heating Exposition

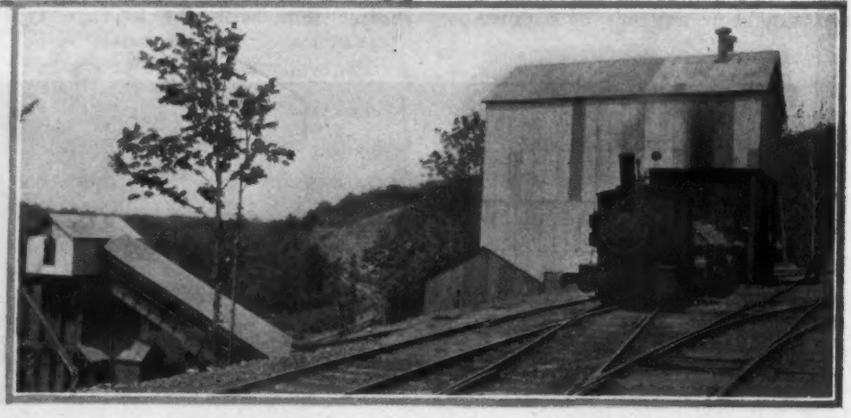
The first International Heating and Ventilation exposition will be held in Philadelphia, Jan. 27-31. Automatic heating equipment will be studied as well as methods of heating. As a special feature, one section of the exposition will be devoted to historical and educational exhibits depicting the progress of heating and ventilating.

Vento Steel Sash Co., Muskegon, Mich., has increased its capital from $50,000 to $100,000.

# New Mine Ships Large Tonnage of Siliceous Iron Ore

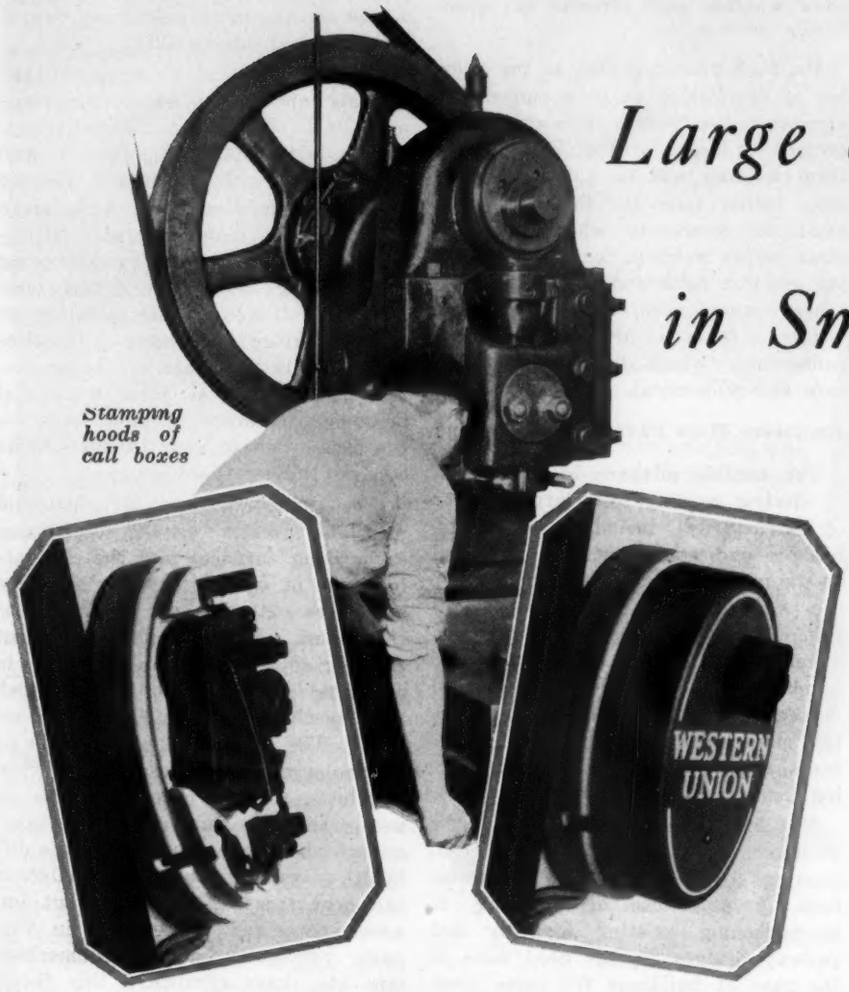
OPENING of the Cleveland-Cliffs Iron Co.'s new siliceous iron ore mine in 1929, with an initial shipment of 439,000 tons, added considerably to the total amount of this grade moved from the Lake Superior district. Several siliceous ore mines on the Marquette range recently developed now are producing heavily. They ship the bulk of this grade, which in 1929 amounted to 967,616 tons, an increase of 70,954 tons over 1928. A year ago the Cleveland-Cliffs company's new Tilden mine was in the development stage. A typical view of the mine, and the crushing plant today, are shown in the accompanying illustrations.

The amount of nonbessemer ore forwarded from that district in 1929 was approximately 44,663,469 tons, according to the Lake Superior Iron Ore association. This was 69.1 per cent of the total. Bessemer ore shipments were 15,717,619 tons, or 24.6 per cent; manganiferous 2,572,920 tons, or 3.9 per cent; siliceous 967,616 tons, 1.5 per cent, and aluminiferous 630,966 tons, 0.9 per cent.



*New siliceous iron ore mine, the Tilden, on the Marquette range, and crushing plant which began operations in* 1929

# *Large Uses of Steel in Small Ways*




*Stamping hoods of call boxes*

*157th Article*

~

*Messenger Call Boxes*

INCLUDED in the multiplicity of small items consuming each year in their manufacture a substantial aggregate of steel is the messenger call box. A by-product of the telegraph, this instrument grew in its application until today more than 315,000 are installed throughout the country, and of this number approximately 260,000 are in the service of one company, the Western Union Telegraph Co.

The call box takes about five ounces of steel, largely sheet metal used in the hood. Hence, the 315,000 call boxes in service represent a consumption of about 50 tons. These instruments serve for a considerable time. Once installed in a commercial building, a messenger call box may serve, respectively, a number of users such as may move in and out of a building from time to time, and even when the building is dismantled or torn down, the device is often reclaimed. Nevertheless, there is a steady flow of new boxes into service. According to reliable estimates, approximately 44,200 new messenger call boxes are installed each year, requiring about seven tons of steel. The manufacture of the hoods, the principal steel item, follows standard stamping and enameling practice.

The first call box system of any description probably was installed in Boston in the 1850's as a fire alarm system. Later, in the 60's it was amplified to enable police roundsmen to make their reports. Then the American District Telegraph Co., New York, established a signal system between private residences and the central telegraph station. There were four signals. The first called a messenger, the second a policeman, the third a fireman and the fourth a physician. On Jan. 1, 1878, this company had installations in 4500 dwellings and stores. The instrument used was devised in the spring of 1872 by E. A. Callahan.

### Many Companies Adopt Boxes

Other early users of the call box included the old Gold & Stock Telegraph Co., organized by the same interests which formed the American District Telegraph Co., and the Domestic Telegraph Co., organized in New York in 1874 with Thomas A. Edison as vice president.

The Western Union Telegraph Co. began using the call box system in 1874, employing at first the service of the American District Telegraph Co. Precisely when the Western Union inaugurated its own call box system is not known. The Postal Telegraph-Cable Co. came along about nine years later, first operating, it is said, a call box system as licensee under patents of other companies.

In recent years the so-called teletype machine has supplanted the messenger call box in some of the larger business establishments. As pointed out in this series in an article on the teletype machine May 23, 1929, more than 50,000 of these machines are in operation, with further substantial expansion in their application expected. However, their application will likely always be restricted to the use of the larger companies.

The messenger call box is one of several telegraphic signaling devices, including fire and burglary signaling boxes. Some of these latter types consume larger tonnages of iron and steel, with castings a major item in their construction. The most familiar type, however, is that used by business houses to call a messenger.

## Authorities Comment on Engineering Progress

(*Concluded from Page* 24)

of the American Welding society as evidence of a desire to standardize on the training of welders and applications of the welding process. In concluding, he states: "By insisting on a rigid adherence to the standard specifications for designs and the code of procedure for training welders, thereby producing uniformly good work, public confidence will be assured and rapid progress made along economic lines."

Thinking along parallel lines, Gilbert D. Fish, consulting structural engineer, Westinghouse Electric & Mfg. Co., New York, adds:

"Our most serious technical problem in structural welding is the determination of the stresses which result from cooling of weld metal at the time welds are made. Although we have had considerable practical experience with various types of arc welded joints in structural service and on the strength of this experience are able to design structures with a good deal of confidence in most cases, yet we require much further experience and experimental research to clear up some perplexing features of initial temperature stress.

"Next among technical problems seems to be the matter of secondary bending stresses occurring in welded joints which do not involve flexible elements and which are subject to stresses due to deformation of the members under load. The problems involved are less difficult to analyze mathematically than initial temperature stresses, but there is a noticeable lack of experimental data needed to show whether such stresses are practically serious."

Mr. Fish predicted that as the number of fabricating shops equipped and organized for welded fabrication increases, a larger proportion of structural welding will be handled in the shop rather than the field. A need exists for devices to hold members in place before welding, thereby eliminating erection bolts and bolt holes. Another obvious need, according to the writer, is for a set of standard welded connections which have been found safe and economical.

### Engineers More Favorable to Welding

The notable advance in application of electric welding to a large variety of structures, including buildings, bridges and steel pipelines is hailed as the most interesting development of the year by Frank P. McKibben, consulting engineer, General Electric Co., Schenectady, N. Y. Although the number of welded structures increased markedly, the outstanding change was the more receptive attitude of engineers, architects, fabricators and building inspectors toward welding.

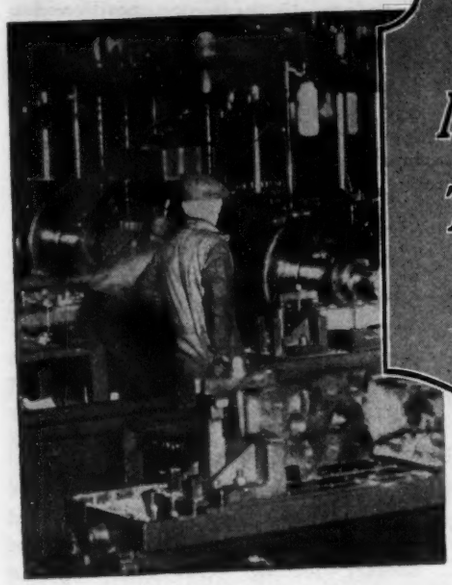
Mr. McKibben also points to the greater use of shop processes in fabricating structural steel. He likewise finds greater use of welding is strengthening existing highway and railway bridges as has been done in the case of buildings for some time. In concluding, Mr. McKibben mentions increased adoption of automatic welding machines for shop fabrication of steel pipelines for conveying oil, water or gas and the large mileage of welded pipelines laid during 1929.

To the review of progress in heat treating should be added the comment of H. W. McQuaid, metallurgist, Timken-Detroit Axle Co., Detroit, who is impressed with the steady advance in small improvements which make heat treating more accurate. Nitriding has been improved by quenching the nitriding steels from a high temperature followed by the drawing operation before machining. Requirements for better gears are being emphasized, the writer says, truck and bus manufacturers turning back to the case-hardened gear because of its superior physical properties.

Concerning furnaces Mr. McQuaid mentions greater use of continuous carburizing furnaces and the circulating type of electric drawing furnaces and more extensive use of automatic equipment. A problem for the heat treating department is the difficulty in obtaining plain carbon steels which consistently will produce uniform results. The writer stated that this is particularly true in the higher carbon warehouse stock, where many lots do not respond satisfactorily to the usual quench and draw. Formerly these difficulties were attributed to variables in the heat treating operation, but improvements and refinements in furnace, pyrometer, quenching mechanism, etc., have eliminated this factor and indicated the difficulty to be in the steelmaking practice.

# 134-Ton Rotor Forging Is Believed World's Largest

A 269,000-pound forging 42 feet long made recently in the plant of the Midvale Co., Philadelphia, for the Allis-Chalmers Mfg. Co., Milwaukee, is believed to be the largest steel forging ever made. This shaft, shown in the accompanying illustration, will be used in a 115,000-kilowatt, 18,000-volt, 3-phase turbo-generator to run at 1800 revolutions per minute. In rated output, the manufacturer claims this will be one of the two largest generators built and with the steam turbine by which it is driven comprise the largest 60-cycle single-generator unit. When completed, the unit is to be installed in the Waukegan plant of the Public Service Co. of Northern Illinois and will be the fifth large Allis-Chalmers unit in the plant, the largest previous unit having a rating of 65,000-kilowatts. Other generators are rated at 50,000, 35,000 and 25,000 kilowatts.



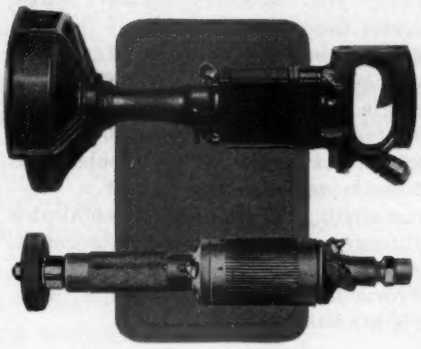
# New Machine Tools and Shop Equipment

"Without tools man is nothing, with tools he is all."—Carlyle

## New Cell-Type Capacitor Is Introduced

No. 1

Electric Machinery Mfg. Co., Minneapolis, recently has announced an improved line of cell-type capacitors for use in power factor improvement. The capacitors are built for either indoor or outdoor use, the outdoor type being completely enclosed in a sheet steel housing. Each unit consists of an assembly of capacitor cells securely mounted on a steel stand. Each cell is a complete capacitor unit, and by connecting two or more cells in parallel any desired kilovolt-ampere rating may be obtained. A feature of the construction is the cylindrical roll, the working element of the capacitor cell. This cylindrical type of construction is said to prevent undue mechanical stress on the tissue. The individual capacitor rolls are mounted on a supporting rack and sealed under oil in the cell. The cell containers are built substantially from 18-gage sheet steel and have welded oil-tight joints. Stands for holding the cells are of welded sheet steel.



*No. 2—Two new rotary pneumatic grinders*

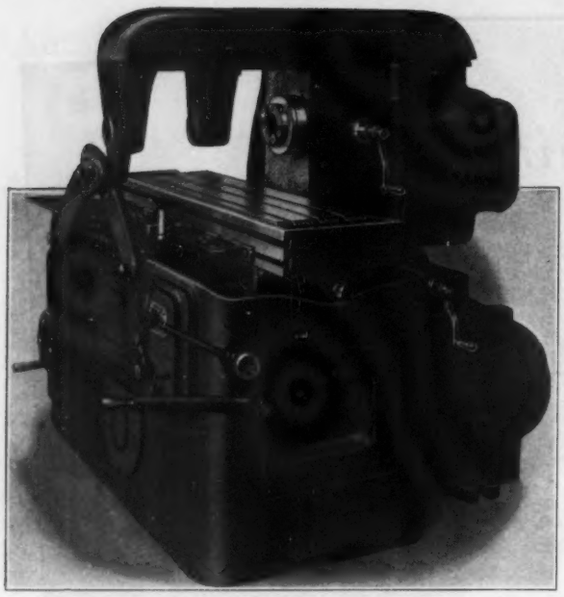
## Grinders Are Pneumatic Rotary Type

No. 2

Independent Pneumatic Tool Co., 600 West Jackson boulevard, Chicago, is introducing a line of rotary pneumatic grinders, claiming advantages of light weight, governed speed, increased power and lack of vibration. The grinders are made in a complete line of sizes and types for all requirements. The accompanying illustration shows the largest and smallest models made. The one has a speed of 4300 revolu-

# Iron Trade Review's Calendar of New Equipment

| Item | Comment | Builder | No. | Date Described | Page |
|---|---|---|---|---|---|
| Stud setter | Power operated; self-opening with quick release | Titan Tool Co. | 268 | Dec. 19 | 1570 |
| Burner | Kerosene; for preheating in welding operations | St. Paul Welding & Mfg. Co. | 269 | Dec. 19 | 1571 |
| Shear | Heavy-duty mill squaring shear; several improvements | Niagara Machine & Tool Works | 270 | Dec. 19 | 1571 |
| Controller | Triple-drum type for floor operation of cranes | General Electric Co. | 271 | Dec. 19 | 1571 |
| Breaker | Meter service breaker; has no fuses | Square D Co. | 272 | Dec. 19 | 1571 |
| Hammers | Pneumatic chipping hammers; short overall lengths | Ingersoll-Rand Co. | 273 | Dec. 19 | 1572 |
| Bearing | Bi-metal type with seamless steel tube backing | Fredericksen Co. | 274 | Dec. 19 | 1572 |
| Contact cable | Pressure on cable at any point closes circuit | Bishop Wire & Cable Corp. | 275 | Dec. 19 | 1572 |
| Compressors | Vertical, duplex, single-acting type; electric drive | Chicago Pneumatic Tool Co. | 276 | Dec. 26 | 1626 |
| Manometer | Larger-bore tube facilitates reading and filling | Meriam Co. | 277 | Dec. 26 | 1626 |
| Facing machine | Faces structural columns; air clamp holds work | Thomas Spacing Machine Co. | 278 | Dec. 26 | 1627 |
| Compressors | Two-stage, air-cooled, ball-bearing equipped; electric drive | Ingersoll-Rand Co. | 279 | Dec. 26 | 1627 |
| Grinder | Rotary-type; two vertical wheel spindles | G. A. Gray Co. | 280 | Dec. 26 | 1628 |
| Screen | Powered vibrator type; single, double or triple deck | Stephens-Adamson Mfg. Co. | 281 | Dec. 26 | 1628 |
| Die sets | Complete line of five types and 85 different sizes | Danly Machine Specialties Inc. | 282 | Dec. 26 | 1628 |
| Capacitor | Cell type for indoor or outdoor use | Electric Machinery Mfg. Co. | 1 | Jan. 9 | 33 |
| Grinders | Complete line; light-weight, rotary, pneumatic | Independent Pneumatic Tool Co. | 2 | Jan. 9 | 33 |
| Milling machines | Plain and duplex hydraulic automatic; special table feed | Cincinnati Milling Machine Co. | 3 | Jan. 9 | 34 |
| Flanging machine | Roller bearings; handles tank and boiler heads | Blue Valley Machine & Die Works | 4 | Jan. 9 | 34 |
| Hoist | Electric monorail type; capacity, 15,000 pounds | Robbins & Myers Inc. | 5 | Jan. 9 | 76 |
| Trench supporter | Used with trencher to eliminate cave-ins | Greiman Ditcher Co. | 6 | Jan. 9 | 76 |
| Lathe | Back-geared screw-cutting 9-inch precision lathe | South Bend Lathe Works | 7 | Jan. 9 | 76 |
| Electrode feed | More positive feed obtained with geared drive | General Electric Co. | 8 | Jan. 9 | 76 |
| Caliper | Indicating device for checking accuracy of rolls | Farrel-Birmingham Co. Inc. | 9 | Jan. 9 | 77 |
| Drive mechanisms | Variable-speed transmission and reversing drive | Morton Mfg. Co. | 10 | Jan. 9 | 77 |
| Purifier | Motor-driven centrifugal oil purifier, all enclosed | Hydroil Corp. | 11 | Jan. 9 | 77 |



*No. 3—New milling machine with enclosed motor drive and locked hydraulic table feed. Dogs on the table provide automatic control of all table movements*

tions per minute and carries an 8-inch elastic bonded or 6-inch vitrified wheel. Its weight is 13½ pounds. The smaller size has a speed of 28,000 revolutions per minute. It is particularly adaptable for such work as touching up dies, etc., and carries a 1¼-inch elastic bonded wheel and various pencils, sticks or special shapes. Weight is 2¾ pounds.

## Plain, Duplex Machines Added to Line

No. 3

Cincinnati Milling Machine Co., Cincinnati, has placed on the market plain and duplex hydraulic automatic milling machines with enclosed motor drives, supplementing its line of hydraulic automatic milling machines with locked hydraulic table feed. Principle units of the plain-type machine are the standard bed table with 24-inch table travel, standard head stock, standard spindle carrier with overarm and two arbor supports, spindle reverse and clutch unit, and the hydraulic feed arrangement located at the rear of the fixed bed. The work table is mounted on a solid semisteel bed which is ribbed heavily and provided with pockets which allow the cutting coolant and chips to flow directly inside the bed. The spindle carrier unit in combination with the spindle reverse and clutch unit, comprise the entire spindle drive. A multiple disk friction clutch and bevel gear reverse mechanism are contained in this spindle reverse unit. Eight standard spindle speeds are available, ranging from 27 to 200 revolutions per minute.

The locked hydraulic feed unit, consisting of a variable displacement metering pump, a small booster pump of simple design, a high-grade gear pump and necessary control valves, forms the closing member of the rear end of the machine bed. Hand feed changes are made by shifting the single lever located on the feed unit. Any desired feed between 0 and 40 inches per minute is obtainable. Automatic variable feed to suit a varying width or depth of cut is obtainable through a variable feed attachment, secured to the bed to the right of the hydraulic feed unit and adjacent to the headstock.

### Lever Controls Table Feed

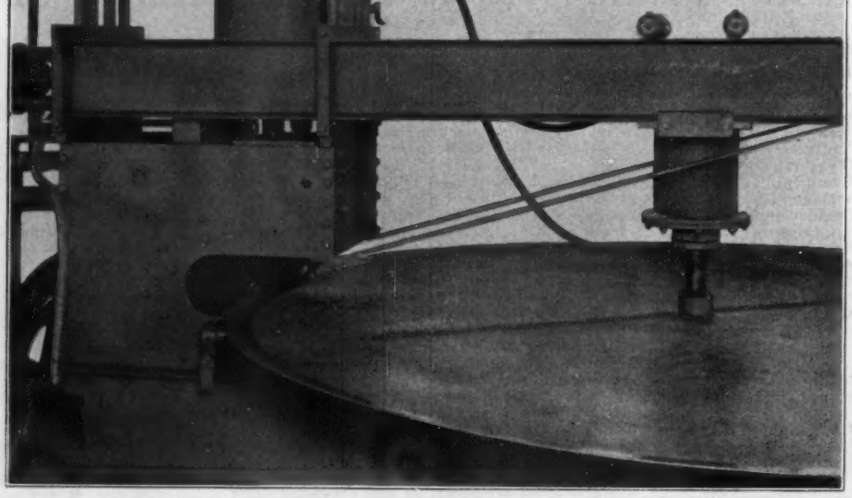
An operating lever is provided for directional control of the table feed. This lever has four positions the nature of which is dependent upon whether the machine is a one-way or two-way cycle. The one-way cycle machine has feed to the left and power quick traverse left and right. Therefore, there is one position for feed, two for power quick traverse of 300 feet per minute and another known as the stop position. Two-way cycle machines have two positions for feed and two for quick traverse. Plain machines are supplied with only one-way or two-way feed cycles while the duplex machines are built only with the one-way cycle. Automatic control of all table movements, including automatic intermittent feeds of the table, is obtained by dogs, including a new type of reversing dog, set on the side of the table, operating a trip plunger with oscillatory and reciprocating movement that controls the hydraulic feed mechanism. The reversal time of any milling cycle has been reduced considerably, permitting the use of shorter feeding strokes and giving faster production.

## Machine Flanges Boiler and Tank Heads

No. 4

Blue Valley Machine & Die Works, Kansas City, Mo., has developed a new type of flanging machine equipped throughout with Timken tapered roller bearings. The machine, shown in the accompanying illustration, is designed for flanging boiler and tank heads, either flat, bulged, concave, round or square, but can be adapted for work on special shapes. The machine will accommodate heads 19 inches and up in diameter. The body is built of steel plate, cut to shape and bolted together. The two extension members, one of which car-

(*Continued on Page* 76)



*No. 4—Machine designed for flanging boiler and tank heads; equipped with roller bearings throughout*

# Editorials

## Mechanization—Spirit of the Decade

HUMAN nature is prone to exaggerate the importance of current events and to underestimate trends of deeper significance. The decade drawing to a close has been punctuated by many spectacular achievements, referred to "as the greatest in world history," but none of which by itself expresses the true spirit of the age. Radio has had its principal development so far in this decade; television has appeared in the scene; Lindbergh has flown from New York to Paris; Byrd, over the North and South Poles; Dr. Hugo Eckener has piloted his GRAF ZEPPELIN around the world.

The financier may remember the ten years chiefly for the Wall Street crash; the physician, for the gift to the world of insulin; the statesman, for the efforts directed toward world peace. Each profession will have its own ideas of the outstanding developments on which history will pin significance.

This has been an age of speed—speed in the air, on land and in the water. New and remarkable records have been matters of common occurrence. This has been an age of prosperity, when more people than ever have shared in the comforts and luxuries of life. It has been a peace-making, humanizing age, notwithstanding some outbursts of brutalizing forces; it has been an age of co-operation, and of less antagonism between classes. But above all it has been an age of mechanization, and to mechanization can be traced many of the effects which have benefited and astonished the world.

Mechanization has meant far more than "mass production." Its influence has extended through all pursuits and probably has affected everyone to a greater degree than anything else that can be named as a characteristic of the decade.

The release of mechanical ingenuity and technical skill has been at the source of so much progress that it probably will continue to be the most impressive feature of the next decade.

---

## Mergers Affecting Vessel Interests

FIVE of the 28 companies operating iron ore, coal and grain carriers on the Great Lakes own or control 52 per cent of the total number of American vessels, and a slightly higher percentage of the combined vessel capacity. The five are the most heavily and directly interested in the iron and steel industry, though there are a few others which have similar connections. While the Steel corporation's subsidiary has 84 of the ships, and the remaining 251 are classed as independents, 92 of the latter are owned by companies which have figured in recent mergers in the iron and steel industry, and their capacities are engaged.

Though the steel mergers have had less influence in altering the setup of vessel interests than they have exerted in ownership and control of iron ore mines, the inference is that the carrying capacity of the large independents will be devoted more exclusively in the future to the needs of associated companies.

Many of the remaining 23 vessel operators, with 159 ships, are studying the situation, though efforts to unite them in one company for more economic operation so far have failed. The advantages of a merger are recognized, but a leader who can reconcile all interests has not yet appeared.

The Steel corporation has been launching larger vessels, and eliminating small ones, though maintaining its total capacity at about an even level. It will continue to have considerable iron ore tonnage for independent vessels, evidently preferring this arrangement to being caught with surplus capacity of its own in a light year.

---

## Making Half of World's Steel

WHILE the United States at times produces half or more of the steel manufactured in the world, for three years it has failed to reach this mark, indicating that in spite of the tremendous increase in output in this country the remainder of the world has been increasing its production at a faster rate.

Based on world production statistics presented in IRON TRADE REVIEW for Jan. 2, world output of steel ingots and castings in 1929 increased 10,000,000 tons over 1928 and American producers were responsible for 4,450,000 tons of this, a shade less than half. This indicates that in spite of the noteworthy tonnage increase in the United States the remainder of the world has been enlarging its steel production at least equally fast

and we are not making any gain in percentage.

In fact, on the longer look it would seem that Europe has been outstripping us in production. In 1913, the United States made 31,000,000 tons of steel of the 74,000,000 for the entire world. In 1921 we made 19,000,000 out of 44,000,000 tons. In 1922 the United States went over the halfway mark with 33,000,000 out of 65,000,000 tons, and maintained this place in 1923 with 44,000,000 out of 77,000,000 tons. In 1924 we fell back with 37,000,000 out of 77,000,000 tons. In 1925 to 1927 we made well over half the world tonnage. The next three years, closing with 1929, the case was reversed and we could account for somewhat less than 50 per cent.

The growth in other countries has been steady and well distributed, no one country showing an increase out of line with the others. Inasmuch as output is based on consumption, rather than capacity, the figures show an increase in use of steel in place of other materials the world over, and failure of the United States to hold the halfway position argues that European countries are holding their own and a little more in general world markets. Yet the United States must be increasing its foreign sales to maintain so large an actual tonnage growth.

## Prices Steady but Facing Test

IRON and steel prices displayed greater resistance during the fourth quarter than might have been expected in view of the precipitate decline in demand during that period. Most products did suffer some depreciation and to the fact that inflation did not accompany the record production of early months of the year may be attributed the lack of a more serious decline in values.

Nineteen twenty-seven witnessed the poorest October and November of the past five years from the standpoint of steel production. The decline from September to December, however, was only slightly more than 2 per cent, while in 1929 the reduction during the corresponding period was nearly 30 per cent. At the same time, IRON TRADE REVIEW'S composite market average of iron and steel prices dropped $1.09 during the three months of the earlier year, while during the three months just passed the decline was only $0.55. It is true that steel consumers have become closer wedded to the practice of hand-to-mouth buying during the past two years, but the fourth quarter of 1927 was preceded by three to four months of below-normal business that required low inventories as against unusual activity during the first nine months of 1929.

The new year opens with finished steel prices fairly close to the levels prevailing 12 months ago. Bars, shapes and plates are on a par with last year; sheets generally are lower, as also are wire products; strip shows a gain for the hot material but a loss on cold-rolled; tin plate recently was cut 10 cents per 100-pound box. Semifinished steel prices are about equal to those prevailing in January, 1929, while pig iron values show increases in the valley but decreases in the eastern and southern markets. The market composite stood at $35.88 on Jan. 2, 1930, against $36.25 on Jan. 2, 1929. The next two weeks should see prices put to a test, as consumers place their first quarter requirements.

If the expected moderate upturn in steel demand materializes during coming months, the outlook for steel prices points to a fair degree of steadiness. The fourth quarter record tends to support this view.

## Cleveland a Larger Factor in Steel

AS AN iron and steel producing center Cleveland would not be accounted first rank. With 11 blast furnaces and steel ingot capacity approximating 3,250,000 tons annually it falls far short of the stature of Pittsburgh or Chicago or Youngstown. But recent shifts in control, especially the trend toward financial management of the iron and steel industry, are strengthening its position.

Executive headquarters of the new Republic merger presumably will be maintained in Cleveland by the leading Eaton investment trust, Continental Shares Inc. In Cleveland are some of the largest stockholders of the Youngstown Sheet & Tube Co., and if this producer and others finally are merged with Republic, the second largest steel interest of the country will be directed from Cleveland.

The recent merger of lake merchant furnaces as the Interlake Iron Corp. brings to Cleveland the management of the largest merchant iron enterprise. It seems probable that the United States Steel Corp. will be manufacturing bar products, for water shipment to Detroit, at Cleveland within a comparatively short time. When navigation opens in the spring a Cleveland maker of semifinished material will ship sheet bars to the new Monroe, Mich., mill of the Newton Steel Co.

For many years Cleveland has been the mainspring of the iron ore and lake shipping industries, with a business in coal second only to that of Pittsburgh. Now it promises to rank second only to New York in actual control exercised over iron and steel production.

# IRON TRADE REVIEW

Volume 86, Number 2 — Published Every Thursday

*E. L. SHANER, Editor.* — *J. D. PEASE, Advertising Director.* — *F. F. LIGHT, Circulation Manager.*

How Steel Mergers Are Influencing Great Lakes Vessel Organization. Page 67.

## *Fact of Railroads' Lead Is Substantiated*

*RAILROADS consumed more finished steel in 1929 than the automotive industry.* IRON TRADE REVIEW *made this assertion in its annual issue Jan. 2, and it presents conclusive evidence substantiating the statement, in the leading article in this issue. The point is important, as well as interesting to a large body of finished steel producers and consumers, as it not only shows the railroads in 1929 regained their lead, but it also proves the reliability of* IRON TRADE REVIEW'S *report. This publication originated the annual analysis of finished steel distribution, and has carried it through consistently for the past eight years, with the co-operation and confidence of the producers who supply the figures. The returns from 106 steel producers, allocating distribution of 36,157,095 tons, prove the railroads, and not the automotive industry, were the largest consumers last year. The proof is significant.*

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*For January 9, 1930*

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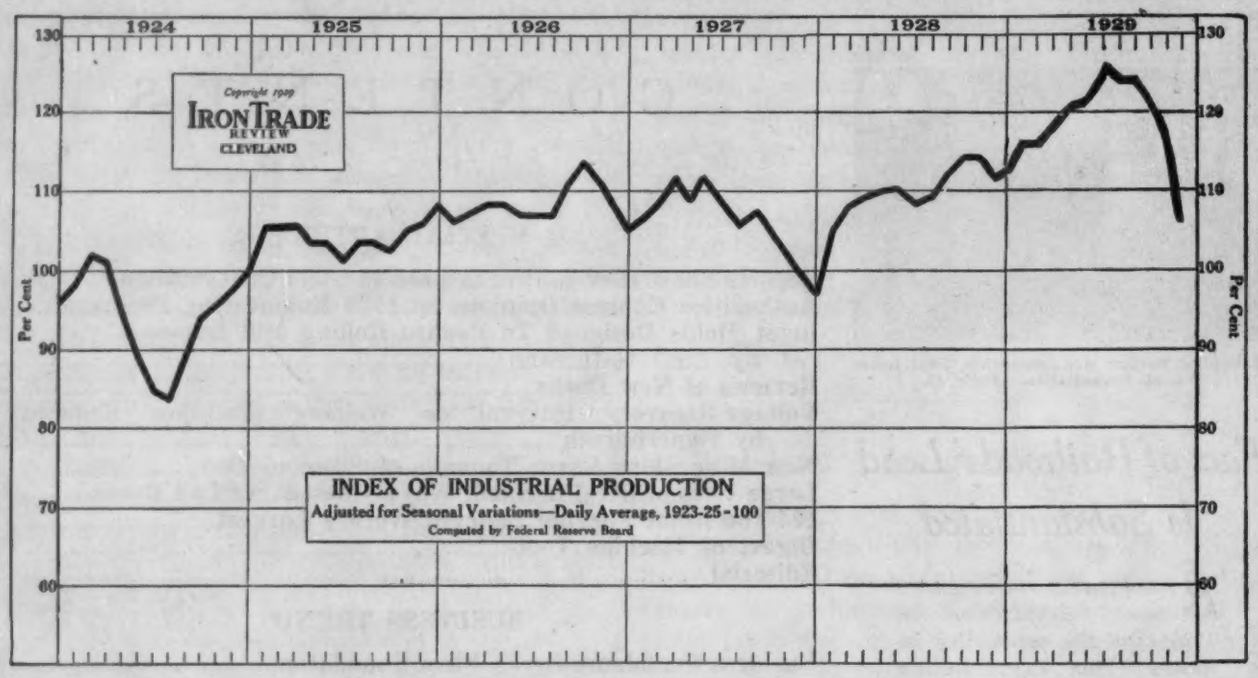
# The Business Trend




## Business Confidence Seeks Firm Foundation

BUSINESS is entering 1930 with a revival of confidence in many respects astonishing in the light of conditions that appeared to exist 10 weeks ago. Yet the tendency to proceed cautiously still is strong. The situation is marked by many irregularities.

THE New York automobile show has quickly stimulated a more cheerful feeling among those having contacts with the motor manufacturing industry. New models and lower prices are counted on to produce sales on a large scale but the real test here is yet to come. Lower auto prices may endanger the steel price structure unless accompanied by large volume operations. It is not unlikely that the steel and automotive industries may rebound beyond recent expectations.

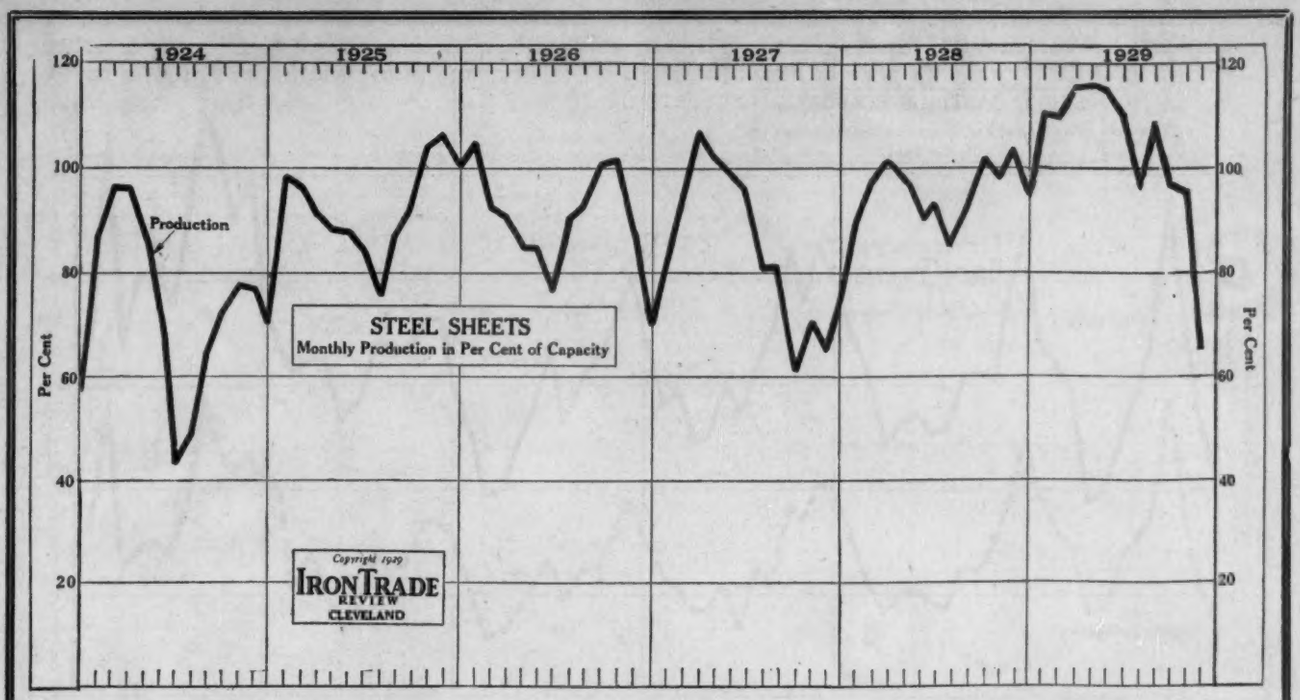
ABSENCE of surplus stocks and the sharpness of the decline in production open the opportunity to quicker revival than otherwise would be the case. Industrial production generally is continuing its downward swing and may go even lower before the trend is reversed. In the steel industry it is probable that the low point was passed late in December.

INDUSTRIAL production reached its 1929 peak in June when the federal reserve board's index stood at 126, or 16 points higher than the average for 1928. By November this index has dropped to 107, which was 9 points below the 1928 average and 19 points under the 1929 peak. The average for the years 1923, 1924 and 1925 is taken as 100.

STUDY of the industrial production index indicates that the speed of industry, beginning to slacken last July, was a factor in the stock market's break in October. Thus in some measure, because other factors were involved, the market's collapse was a result rather than a cause of the business recession. Corrective measures have been applied at the source of the difficulties leading to this recession. Industrial output has been cut and stocks have been kept low, creating a healthy situation in which business may adjust itself and regain its momentum.

OPTIMISM within the steel industry is perhaps greater than it is without. This is indicated by the low levels to which common steel stocks have fallen and a relatively better upturn for steels than industrials.

# The Business Trend

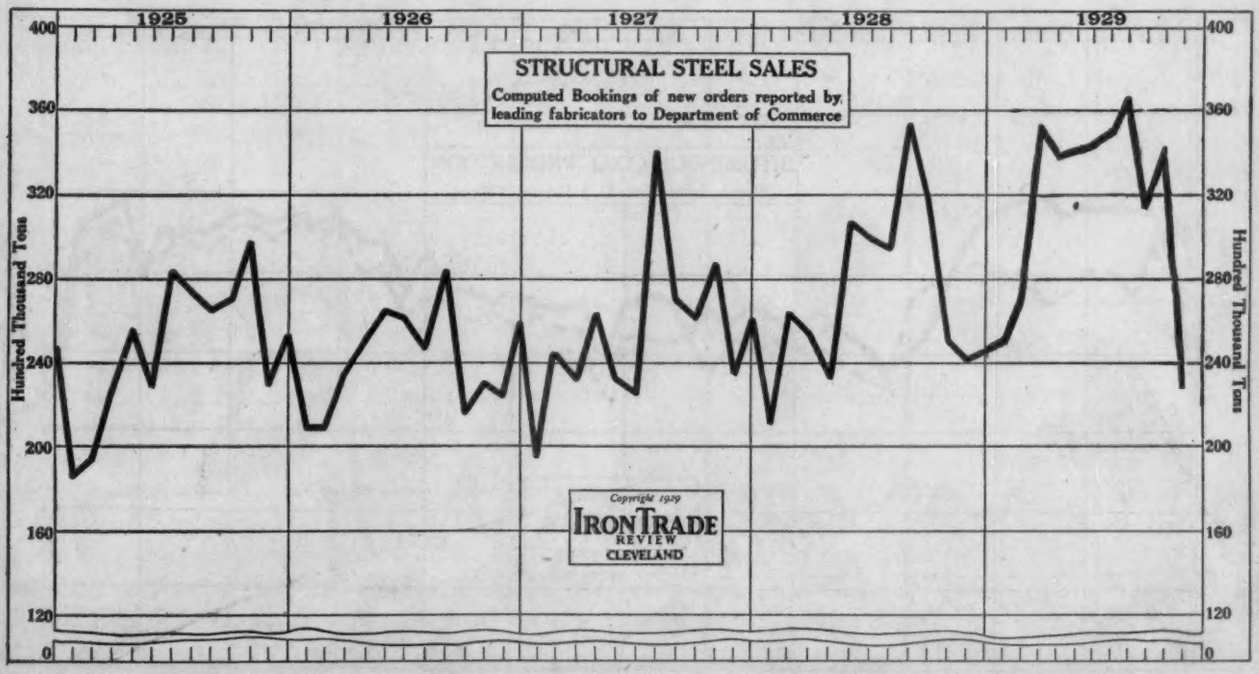



## Independent Sheet Output

SALES of independent steel sheet producers dropped 48 per cent in November. Output was cut to 65.8 per cent of capacity against 95.3 per cent in October. Production amounted to 204,071 tons, according to the National Association of Flat Rolled Steel Manufacturers, or the lowest for any month in recent years. Stocks increased 9346 tons, amounting at the beginning of December to 178,736 tons, equivalent to 57.6 per cent of capacity. Output for November, 1928, was 346,041 tons, or 101.1 per cent of capacity.

## Structural Steel Awards

NEW orders for fabricated structural steel in November dropped to the lowest level in 23 months, according to reports of producers to the department of commerce. Computed bookings totaled 227,150 tons compared with 350,350 tons in the previous month and 242,550 tons in November, 1928. In March structural awards reached the high total of 358,050 tons. A record for 1929 is assured, however, the 11 months total amounting to 3,534,300 tons against 3,041,500 tons for the corresponding 1928 period.



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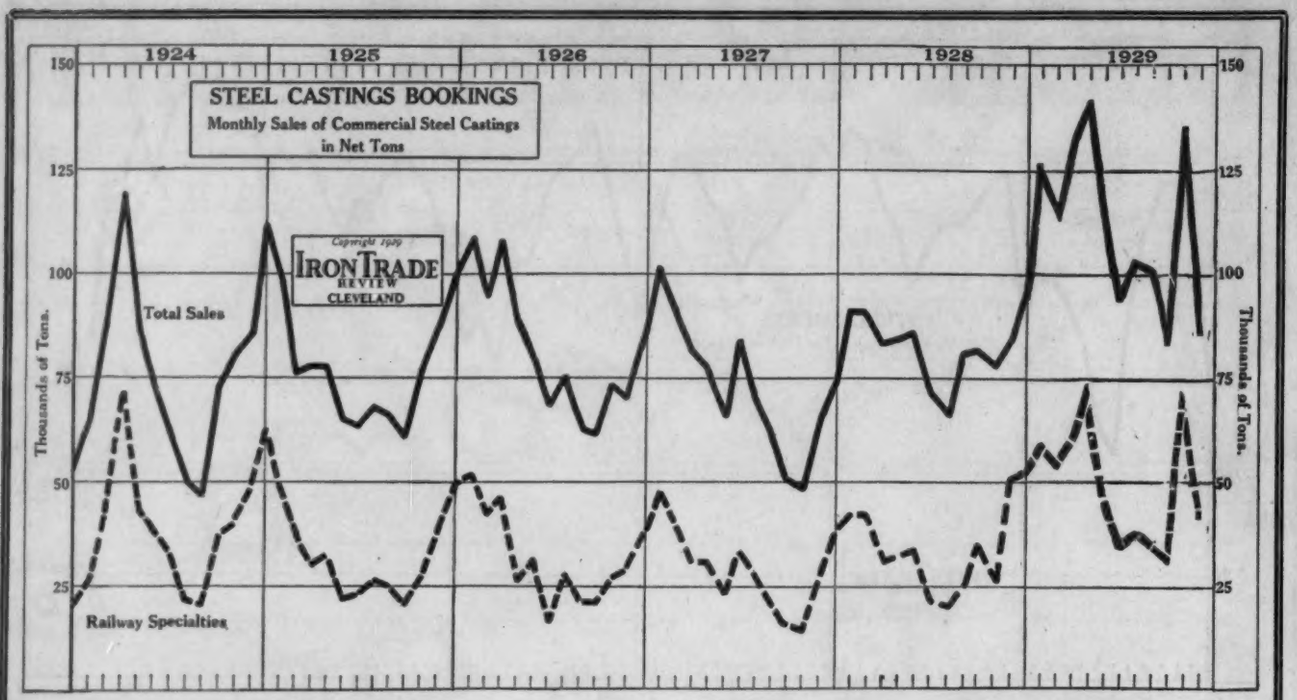
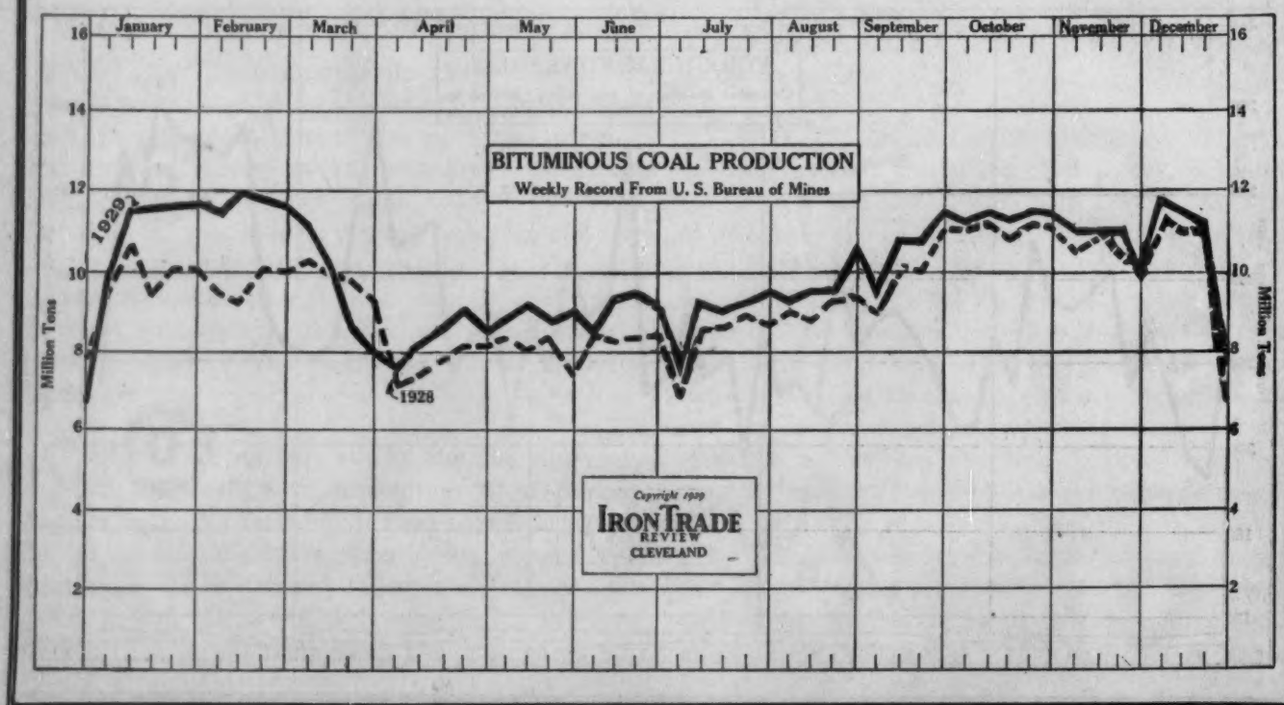



## Steel Castings

ORDERS for steel castings as reported by leading producers dropped from 92 per cent of capacity in October to 61 per cent in November. Bookings, however, remained above the 59 per cent rate of one year ago. Production also was higher. November bookings totaled 88,424 net tons against 134,183 tons in October and 84,445 tons for November, 1928. November bookings of railway specialties totaled 41,295 tons against 72,379 tons in October and 34,545 tons in November, 1928.

## Soft Coal Output

BITUMINOUS coal production, the department of commerce estimates, amounted to 525,358,000 net tons in 1929, or 4.9 per cent more than in 1928. This is the largest annual output since 1926 when 573,367,000 tons were mined. The Christmas holiday reduced loadings at the mines during the week ended Dec. 28 to 7,675,000 tons, a decrease of 3,481,000 tons from the preceding week's total but 673,000 tons more than in Christmas week, 1928. Higher operations are indicated for the early weeks of 1930.



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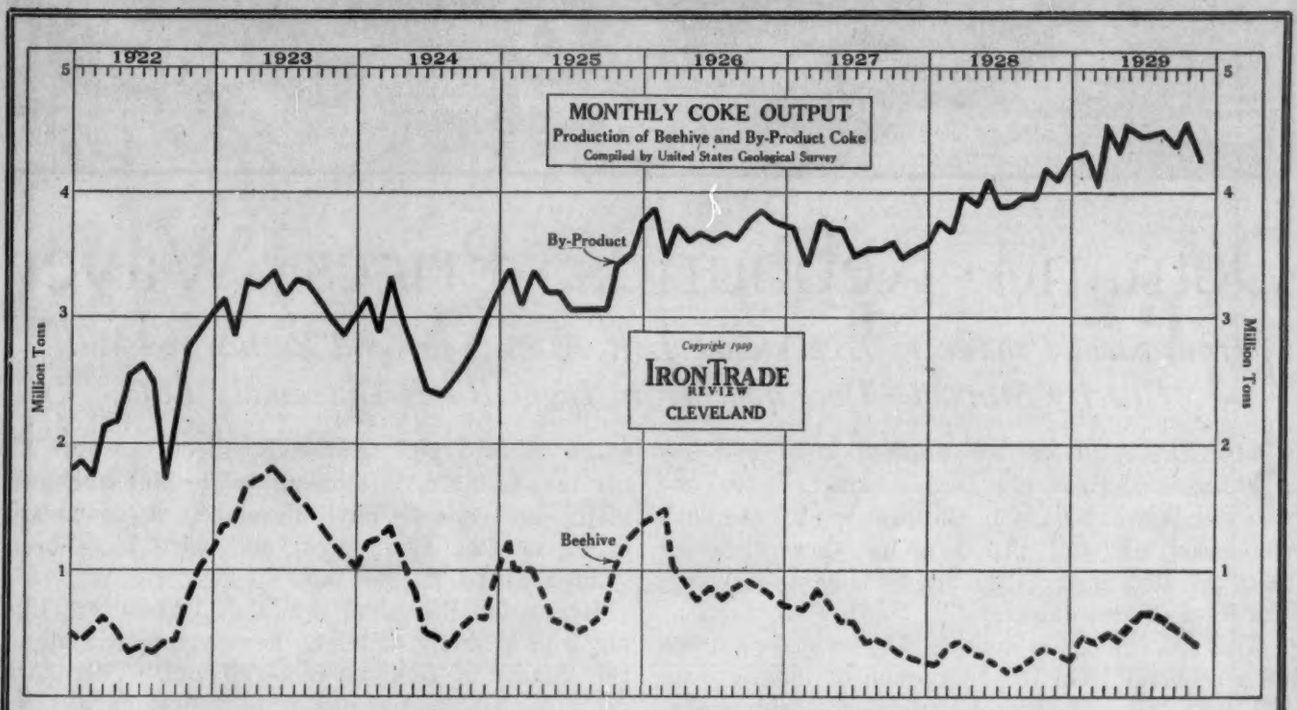
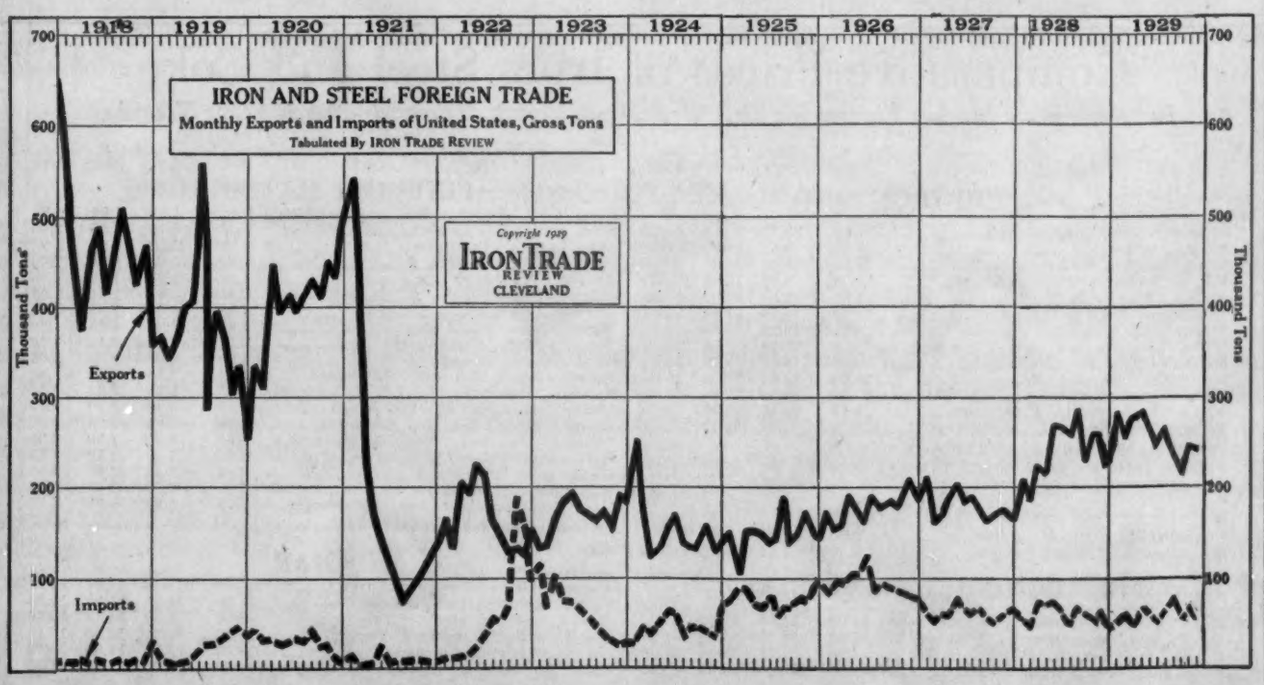



## By-Product Coke Output

BY-PRODUCT coke production in 1929 set a new annual record estimated at around 53,500,000 tons although the year ended with lessened activity. November production was 4,305,256 tons against 4,610,138 tons in October and 4,133,200 tons in November, 1928. This represented an average daily rate of 143,509 tons for November compared with 148,714 tons for October and 137,773 tons for November, 1928. Beehive coke output dropped to a new low level, November, amounting to 413,300 tons.

## Foreign Trade In Steel

BOTH exports and imports of iron and steel products were greater in 1929 than in 1928. November exports, totaling 241,829 tons, were 2 per cent lower than in October when shipments were 247,646 tons, the highest since last July. November imports totaling 54,433 tons were the lowest since last March. In October 63,226 tons of foreign steel were received. Exports for 11 months of 1929 were 8 per cent greater than in 1928 and imports were 2 per cent greater. Pig iron continues the principal imported product.



# Demand Rebounds; Prices Waver

*Iron, Steel Producers Experience Lift After Year-end Lethargy—Will Clarify Market—December Iron, Ingot Rates Extremely Low*

SPECIFICATIONS for finished steel and releases against pig iron contracts have expanded materially in the past week. Demand for practically all products has been heavier than in December, although considerably below the level of last January.

This betterment is appraised by most producers as a rebound from the repression of buying over the year-end. Producers generally continue confident of gradual improvement over the first half year, but recognize several conditions precedent to it.

### May End Price Uncertainty This Week

For one thing, consumers still appear determined to avoid commitments, except for actual spot requirements, until the price situation is clarified, and by common consent this clarification approaches. The expectation of consumers that prices would go no higher and might go lower may be justified.

Shading of tin plate has been formally recognized by a reduction of 10 cents a base box, to $5.25, Pittsburgh. Autobody sheets are off $2 per ton, to 3.90c, Pittsburgh, while blue annealed plates and sheets have developed a downward range of $2. Strip steel and wire have been shaded $1 to $2 per ton.

Heavy finished steel prices at Pittsburgh, like pig iron in many districts, have yet to withstand the impact of tonnage requirements. There are reports that valley pig iron prices have been shaded, and that $34 for sheet bars is not strong. Iron and steel scrap, having experienced several months of tobogganing, is an exception to general price softness.

### Carriers Begin 1930 Like Leaders

The railroads have started 1930 determined to hold their regained title of premier consumer of finished steel. Including the enlarged Chesapeake & Ohio-Pere Marquette-Hocking Valley program of 11,375 freight cars, 130 locomotives and 55 tenders, about 30,000 freight cars are on active inquiry. Seaboard Air Line closes Jan. 12 on 1000 cars. Revised figures place 1929 freight car

## Comparative Prices of Iron, Steel and Coke

**Representative Market Figures for This Week, Last Month, Three Months and One Year Ago**

| | Jan. 8, 1930 | Dec., 1929 | Oct., 1929 | Jan., 1929 |
|---|---|---|---|---|
| **PIG IRON** | | | | |
| Bessemer, del. Pittsburgh | $20.76 | 20.76 | 20.76 | 19.96 |
| Basic, valley | 18.50 | 18.50 | 18.50 | 17.50 |
| Basic, eastern, del. eastern Pa. | 19.50 | 19.75 | 19.75 | 20.15 |
| No. 2 foundry, del. Pittsburgh | 19.76 | 19.76 | 19.76 | 19.36 |
| No. 2 foundry, Chicago | 20.00 | 20.00 | 20.00 | 20.00 |
| *Southern No. 2, Birmingham | 14.50 | 14.25 | 14.00 | 16.50 |
| **No. 2X, Virginia furnace | 18.25 | 18.25 | 19.65 | 21.25 |
| **No. 2X, Eastern del. Philadelphia | 21.76 | 21.76 | 22.26 | 22.26 |
| Malleable, valley | 19.00 | 19.00 | 19.00 | 18.00 |
| Malleable, Chicago | 20.00 | 20.00 | 20.00 | 20.00 |
| Lake Superior, charcoal, del. Chicago | 27.04 | 27.04 | 27.04 | 27.04 |
| †Gray forge, del. Pittsburgh | 19.13 | 19.13 | 19.13 | 18.76 |
| Ferromanganese, del. Pittsburgh | 104.79 | 104.79 | 109.79 | 109.79 |
| **COKE** | | | | |
| Connellsville furnace, ovens | 2.60 | 2.65 | 2.65 | 2.75 |
| Connellsville foundry, ovens | 3.50 | 3.50 | 3.75 | 3.75 |
| **SEMIFINISHED MATERIAL** | | | | |
| Sheet bars, open-hearth, Youngstown | 34.00 | 34.00 | 35.00 | 34.00 |
| Sheet bars, open-hearth, Pittsburgh | 34.00 | 34.75 | 35.00 | 34.00 |
| Billets, open-hearth, Pittsburgh | 34.00 | 34.75 | 35.00 | 33.00 |
| Wire rods, Pittsburgh | 40.00 | 40.00 | 40.00 | 42.00 |

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.
†Now based on Pitts. dist. fur. price; formerly on Valley base.

| | Jan. 8, 1930 | Dec., 1929 | Oct., 1929 | Jan., 1929 |
|---|---|---|---|---|
| **FINISHED MATERIAL** | | | | |
| Steel bars, Pittsburgh | 1.90 | 1.90 | 1.90 | 1.90 |
| Steel bars, Chicago | 2.00 | 2.00 | 2.05 | 2.00 |
| Steel bars, Philadelphia | 2.22 | 2.22 | 2.22 | 2.27 |
| Iron bars, Chicago | 2.00 | 2.00 | 2.05 | 2.00 |
| Shapes, Pittsburgh | 1.90 | 1.90 | 1.95 | 1.90 |
| Shapes, Philadelphia | 1.91 | 1.91 | 2.01 | 2.06 |
| Shapes, Chicago | 2.00 | 2.00 | 2.05 | 2.00 |
| Tank plates, Pittsburgh | 1.90 | 1.90 | 1.95 | 1.90 |
| Tank plates, Philadelphia | 2.10 | 2.10 | 2.15 | 2.10 |
| Tank plates, Chicago | 2.00 | 2.00 | 2.05 | 2.00 |
| Sheets, black, No. 24, Pittsburgh | 2.75 | 2.75 | 2.80 | 2.85 |
| *Sheets, blue anl., No. 13, Pittsburgh | 2.25 | 2.35 | 2.35 | 2.10 |
| Sheets, gal., No. 24, Pittsburgh | 3.40 | 3.40 | 3.50 | 3.60 |
| Sheets, black, No. 24, Chicago | 2.90 | 2.90 | 3.05 | 3.00 |
| *Sheets, blue anl., No. 13, Chicago | 2.50 | 2.50 | 2.50 | 2.25 |
| Sheets, galvanized, No. 24, Chicago | 3.55 | 3.60 | 3.70 | 3.75 |
| Plain wire, Pittsburgh | 2.40 | 2.40 | 2.40 | 2.50 |
| Wire nails, Pittsburgh | 2.40 | 2.40 | 2.45 | 2.65 |
| Tin plate, per base box, Pittsburgh | 5.25 | 5.35 | 5.35 | 5.35 |
| **SCRAP** | | | | |
| Heavy melting steel, Pittsburgh | 16.50 | 15.10 | 17.30 | 19.00 |
| Heavy melting steel, eastern Pa. | 14.50 | 14.50 | 15.80 | 16.50 |
| Heavy melting steel, Chicago | 12.50 | 12.50 | 14.45 | 16.50 |
| No. 1 wrought, eastern Pa. | 15.25 | 15.25 | 16.00 | 15.50 |
| No. 1 wrought, Chicago | 13.20 | 13.25 | 14.85 | 14.75 |
| Rails for rolling, Chicago | 14.50 | 14.60 | 17.05 | 17.10 |

*Comparison for January, 1929, is with old blue annealed base, No. 10.

# Current Prices for Rolled Steel Products

### STEEL PLATES

| | |
|---|---|
| Pittsburgh, base | 1.90c |
| Philadelphia, del. | 2.10c to 2.15c |
| New York, del. | 2.175c to 2.225c |
| Boston, del. | 2.265c to 2.415c |
| Chicago, base | 2.00c |
| Cleveland, delivered | 2.09c |
| Lackawanna, N. Y., base | 2.05c to 2.15c |
| Birmingham, base | 2.05c |
| Coatesville, Pa., base | 2.00c to 2.05c |
| Pacific Coast, c.i.f. | 2.35c |
| St. Louis, del. | 2.22c |
| Detroit, del. | 2.19c |

### STRUCTURAL SHAPES

| | |
|---|---|
| Pittsburgh, base | 1.90c |
| Philadelphia, del. | 1.86c to 2.01c |
| New York, del. | 2.145c to 2.195c |
| Boston, del. | 2.265c |
| Chicago, base | 2.00c |
| Cleveland, delivered | 2.09c |
| Lackawanna, N. Y. | 2.05c to 2.15c |
| Birmingham, base | 2.05c |
| Bethlehem, Pa., base | 2.00c to 2.10c |
| Pacific Coast, c.i.f. | 2.35c |
| Detroit, del. | 2.19c |

### BARS

#### SOFT STEEL

| | |
|---|---|
| Pittsburgh, base | 1.90c |
| Chicago, base | 2.00c |
| Birmingham, base | 2.05c |
| Lackawanna, N. Y., base | 2.00c to 2.05c |
| Pacific Coast, c.i.f. | 2.35c |
| Cleveland, base, local mills | 1.85c |
| Cleveland, del., outside mills | 1.875c |
| Philadelphia, del. | 2.22c |
| New York, delivered | 2.24c to 2.29c |
| Boston, delivered | 2.265c |
| Detroit, del. | 2.085c to 2.19c |
| Pittsburgh, cold finishing | 2.00c |
| Pittsburgh, forging quality | 2.15c |

#### RAIL STEEL

| | |
|---|---|
| Chicago Heights | 1.90c to 1.95c |
| Eastern mills | 1.85c to 1.95c |

#### IRON

| | |
|---|---|
| Chicago, base | 2.00c to 2.10c |
| New York, delivered | 2.19c to 2.24c |
| Philadelphia, delivered | 2.17c to 2.22c |
| Pittsburgh, refined | 2.75c to 4.25c |

#### REINFORCING

| | |
|---|---|
| Pittsburgh, billet, cut lengths | 2.20c |
| Stock lengths from mill | 1.95c |
| Chicago, billet | 1.90c to 2.00c |
| Chicago, rail steel | 1.80c to 2.00c |
| Chicago, rail steel, road and bridge work | 1.95c to 2.05c |
| Philadelphia, cut lengths | 2.42c to 2.62c |

#### CORROSION, HEAT RESISTANT ALLOYS

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets....35.00c; plates....31.00c; bars....28.00c ....Carbon 0.12% and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30% inc.

| | A | B | C | D |
|---|---|---|---|---|
| Bars | 19c | 20.5c | 23c | 28c |
| Plates | 22c | 23.5c | 26c | 31c |
| Sheets | 26c | 27.5c | 30c | 35c |
| Hot strip | 19c | 20.5c | 23c | 28c |
| Cold strip | 28c | 29.5c | 32c | 37c |

### SHEETS

#### SHEET MILL BLACK, NO. 24

| | |
|---|---|
| Pittsburgh, base | 2.75c |
| Philadelphia, delivered | 2.97c to 3.07c |
| Gary, Indiana Harbor | 2.85c |
| Chicago, delivered | 2.90c |
| Birmingham base | 3.00c |
| St. Louis, del. | 3.07c |

#### TIN MILL BLACK, NO. 28

| | |
|---|---|
| Pittsburgh, base | 2.90c to 3.00c |
| Gary, base | 3.00c to 3.10c |

#### GALVANIZED NO. 24

| | |
|---|---|
| Pittsburgh, base | 3.40c |
| Philadelphia, delivered | 3.62c to 3.72c |
| Gary, Indiana Harbor | 3.50c to 3.60c |
| Chicago delivered | 3.55c to 3.65c |
| Birmingham, base | 3.65c |
| St. Louis, del. | 3.82c |

#### BLUE ANNEALED SHEETS NO. 13

| | |
|---|---|
| Pittsburgh, base | 2.25c to 2.35c |
| Chicago, district mills | 2.45c |
| Chicago, delivered | 2.50c |
| St. Louis, delivered | 2.67c |
| Philadelphia, delivered | 2.57c to 2.67c |
| Birmingham | 2.50c |

#### BLUE ANNEALED PLATES, NO. 9-10

| | |
|---|---|
| Pittsburgh, base | 2.10c to 2.20c |
| Chicago district mills | 2.30c |
| Chicago, delivered | 2.35c |
| Philadelphia, delivered | 2.42c to 2.52c |
| St. Louis, delivered | 2.52c |
| Birmingham | 2.35c |

#### AUTOMOBILE, NO. 20

| | |
|---|---|
| Pittsburgh, base | 3.90c |
| Detroit, delivered | 4.29c |

#### FURNITURE

| | |
|---|---|
| Pittsburgh | 4.00c |

*(Turn to the following page)*

awards at 106,105, the highest total since 1924.

The Burlington, which has just distributed 500 cars and 67,050 tons of rails to western makers, may buy 2000 more cars. The Nickel Plate is awarding 29,860 tons of rails. Track fastening orders at Chicago have totaled 14,000 tons in the past week, with twice that tonnage on inquiry. Many carriers are placing their first quarter finished steel requirements.

Automotive demand for iron and steel, while somewhat improved over December, still reflects a hesitancy which will not pass until the verdict of the shows on new models is in. Farm implement manufacturers are more generous buyers at Chicago, which has experienced a greater revival of demand than any other district. Building continues seasonally slack, and prospective pipe line work has not yet matured.

### Plates Lead Finished Products

Slack automotive and brisk railroad demand contrast markedly in the comparative sluggishness of the sheet, strip and bar markets and the quickening of plate mills. The Chesapeake & Ohio car and locomotive inquiry alone contemplates the purchase of nearly 150,000 tons of heavy steel, chiefly plates. Sixteen river barges are being placed at Pittsburgh, while in the East the Standard Oil Co. of New York is a heavy buyer. Plate mill operations at Chicago have been stepped up to 70 per cent. Final statistics on December production of pig iron and steel ingots reveal how drastic was the year-end retrenchment but confirm 1929 as a record. Last month the daily pig iron rate declined to 91,513 tons, the lowest since December, 1927, but the month's output of 2,836,917 tons gives 1929 a total of 42,270,183 tons, compared with 37,831,741 tons in 1928 and the previous record of 40,025,850 tons in 1923. Active blast furnace stacks suffered a net loss of 19 in December, following the dropping of 29 in November.

### 1929 an 88 Per Cent Steel Year

December averaged 115,851 tons of ingots daily, the lowest rate since October, 1924, but an output of 2,896,269 tons brought the 1929 total of open-hearth and bessemer ingots to 54,164,348 tons, handily exceeding the previous record, the 49,865,185 tons of 1929. The steel industry averaged an 88.8 per cent operating rate in 1929, contrasted with 85 in 1928.

Chicago this week is averaging 55 to 60 per cent operations. Pittsburgh and Buffalo are at about 60 per cent, and the Youngstown district 65, with independent plants there doing better than Steel corporation units. Finishing mills in all districts are on improved schedules. Steel corporation subsidiaries operate at 66 per cent.

Weakness in sheets and tin plate has depressed the IRON TRADE REVIEW composite of 14 leading products 16 cents, to $35.72, its lowest since October, 1928. In December the index had an average of $35.95.

## Composite Market Average

**Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe**

| | |
|---|---|
| This week (January 8, 1930) | $35.72 |
| Last week (January 1, 1930) | 35.88 |
| One month ago (December, 1929) | 35.95 |
| Three months ago (October, 1929) | 36.23 |
| One year ago (January, 1929) | 36.24 |
| Ten years ago (January, 1920) | 59.40 |
| Fifteen years ago (January, 1915) | 24.76 |

# Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

**Tubular Products Quoted On Last Editorial Page—See Preceding Page For Other Products**

## HOOPS, BANDS, STRIPS

| | |
|---|---|
| Hot strip, to 6-in., Pitts. | 2.00c |
| Hot strip 6 1/8 to 24-in., Pitts. | 1.90c |
| Hot strip, bands 6 in. and under, Chicago | 2.10c |
| Do. 6 1/8 to 23 1/8 | 2.00c |
| Cooperage stock, Pittsburgh | 2.20c |
| Do, Chicago | 2.30c |
| Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 ton and over) | 2.75c |
| Worcester, Mass. (3 tons and over) | 2.90c to 3.00c |

## ALLOY STEEL

Hot Rolled
F.o.b. Mills
Alloy Quality Bar Base is 2.65c

| S.A.E. Series Number | Alloy differential | Net 100 lb. bars |
|---|---|---|
| 2000 | 0.25 | $2.90 |
| 2100 | 0.55 | 3.20 |
| 2300 | 1.50 | 4.15 |
| 2500 | 2.25 | 4.90 |
| 3100 | 0.55 | 3.20 |
| 3200 | 1.35 | 4.00 |
| 3300 | 3.80 | 6.45 |
| 3400 | 3.20 | 5.85 |
| 4100 0.15-0.25 Mo. | 0.50 | 3.15 |
| 4100 0.25-0.40 Mo. | 0.70 | 3.35 |
| 4600 0.20-0.30 Mo. 1.25-1.75 Ni. | 1.05 | 3.70 |
| 5100 0.60-0.90 Cr. | 0.35 | 3.00 |
| 5100 0.80-1.10 Cr. | 0.45 | 3.10 |
| 5100 Chrome Spring | 0.20 | 2.85 |
| 6100 Bars | 1.20 | 3.85 |
| 6100 Spring Steel | 0.95 | 3.60 |
| Chrome Nickel Vanadium | 1.50 | 4.15 |
| Carbon Vanadium | 0.95 | 3.60 |
| 9250 (flats) | 0.25 | 2.90 |
| 9250 (rounds, squares) | 0.50 | 3.15 |

Hot rolled alloy billets 4 x 4-inch and over take same price per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

## COLD-FINISHED STEEL

| | |
|---|---|
| Bars, drawn or rolled, Pitts., Chi., Buffalo, and Cleve. c.l. | 2.20c |
| Do, delivered, Detroit | 2.435c |
| Shafting (turned, polished) Pittsburgh, Buffalo | 2.20c |
| Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch) | 2.55c to 3.00c |

## WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

| | Trade | Jobbers |
|---|---|---|
| Standard wire nails | $2.50 | $2.40 |
| Cement coated nails | 2.50 | 2.40 |
| Galvanized nails | 4.50 | 4.40 |
| (Per pound) | | |
| Polished staples | 2.95c | 2.85c |
| Galvanized staples | 3.20c | 3.10c |
| Barbed wire, galvanized | 3.15c | 3.05c |
| Annealed fence wire | 2.65c | 2.55c |
| Galvanized wire | 3.10c | 3.00c |

Anderson, Ind., $1 higher. Chicago $2 higher, Duluth, Birmingham $3 higher.

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

| | |
|---|---|
| Bright plain wire, 6 to 9 gage | 2.40c |
| Wire, delivered Detroit | 2.57c |
| Nails, delivered Detroit | $2.58 to 2.72 |

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland-Ironton base on products made there; Duluth $2 higher; Fairfield, Ala., $3 higher.

## CUT NAILS, CHAIN, PILING

| | |
|---|---|
| Cut nails, c.l., f.o.b. mills | 2.70c |
| Cut nails, l.c.l., f.o.b. mills | 2.80c |
| Sheet piling, base, Pittsburgh | 2.20c |

Chain proof BB and BBB, Pitts.

| | |
|---|---|
| 3/16-in. to ½-in. | 33 1/3 and 5 off |
| 9/16-in. to 1½-in. | 33 1/3 off |

## CAST IRON WATER PIPE

Class B Pipe—Per Net Ton

| | |
|---|---|
| Six-inch and over, Birming'm | $37.00 to 38.00 |
| Four-inch, Birmingham | 41.00 to 42.00 |
| Four-inch, Chicago | 48.20 to 49.20 |
| Six-inch to 24-inch, Chicago | 44.20 to 45.20 |
| Six-inch and over, New York | 36.50 to 38.50 |
| Four-inch, New York | 40.00 to 41.00 |
| Standard fittings, Bir. base | $100.00 |

Six to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

## TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

| | |
|---|---|
| *Tin plate, coke base | $5.25 |

Gary, Ind., base 10 cents higher.

| | |
|---|---|
| Long ternes, primes, No. 24— | 4.00c |

*Price subject to quantity differentials.

## WASHERS

| | |
|---|---|
| Wrought, c.l., Pitts. dist. | $6.50 to 6.75 off |
| Wrought, c.l., Chicago dist. | $6.702 to 26.90 off |
| Lock: to dealers | 85-5 off |
| Lock: to consumers | 85 off |

## RAILS, TRACK MATERIAL

| | |
|---|---|
| Standard bessemer rails, mill | $43.00 |
| Standard open-h'th rails, mill | $43.00 |
| Relay rails, Pitts., 60 to 90 lb. | $24.00 to 29.00 |
| Light rails, 25 to 45, mills | $36.00 |
| Angle bars, Chicago base | 2.75c |
| Spikes, railroad, Pittsburgh | 2.80c |
| Spikes, small railroad, 7/16-inch and smaller, Pitts. | 2.80c |
| Spikes, boat and barge, Pitts. | 3.00c |
| Spikes, railroad, Chicago | 2.80c |
| Track bolts, Pitts., steam roads | 3.80c |
| Track bolts, Pitts., stand. jobbers | 70 off list |
| Track bolts, Chicago | 3.80c |
| Tie plates, Chicago, Pitts. | $43.00 |

## BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

### CARRIAGE BOLTS

| | |
|---|---|
| All sizes, cut thread | 60 to 70 off |

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

| | |
|---|---|
| Eagle list | 60 to 70 off |

### MACHINE BOLTS

| | |
|---|---|
| All sizes, cut thread | 60 to 70 off |

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

| | |
|---|---|
| Lag screws | 60 to 70 off |
| Plow bolts, Nos. 1-2-3-7 heads | 60 to 70 off |
| Tap bolts | 60 to 70 off |
| Blank bolts | 60 to 70 off |
| Stud bolts without nuts | 60 to 70 off |
| Stove bolts, 75, 20, 10 and 5 off in pkgs., 75, 10, 10 and 5 with 2½ off in bulk. | |
| Tire bolts | 60-5 off |

### Nuts

| | |
|---|---|
| Semifinished | 60 to 70 off |

### HEXAGON CAP SCREWS

| | |
|---|---|
| Milled | 80-10-5 off |
| Upset 1 in. diam. and smaller | 5 off |

### SQUARE HEAD SET SCREWS

| | |
|---|---|
| Milled | 80-5 off |
| Upset 1 in. diam. and smaller | 80-10-5 off |

## RIVETS

| | |
|---|---|
| Struc., c.l., Pitts.-Cleve. | 3.10c |
| Structural, c.l., Chicago | 3.20c |
| **7/16-inch and smaller, Pitts. | 70 and 10 off |
| Chi., Cleve. | 70 to 70 and 10 off |

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

# Raw Materials and Semifinished Products

## SEMIFINISHED STEEL

Prices Per Gross Ton

### BILLETS AND BLOOMS

4 x 4-inch base

| | |
|---|---|
| Pittsburgh, open-hearth | $34.00 |
| Pittsburgh, bessemer | 34.00 |
| Youngstown | 34.00 |
| Cleveland | 34.00 |
| Philadelphia | 39.30 |
| Chicago | 36.00 |
| Forging, Chicago | 41.00 |
| Forging, Pittsburgh | 39.00 |
| Forging, Philadelphia | 44.30 |

### SHEET BARS

| | |
|---|---|
| Pittsburgh | $34.00 |
| Youngstown | 34.00 |
| Cleveland | 34.00 |
| Chicago | 36.00 |

### SLABS

| | |
|---|---|
| Pitts., Young. | 34.00 |
| Cleveland | 34.00 |

### WIRE RODS

| | |
|---|---|
| Pittsburgh, Cleveland | $40.00 |
| Chicago | 41.00 |
| Youngstown | 40.00 |

### SKELP

| | |
|---|---|
| All grades, Pittsburgh | 1.85c to 1.90c |

## IRON ORE

### LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

| | |
|---|---|
| Old range bessemer, 51½% | $4.80 |
| Mesabi bessemer, 51½% | 4.65 |
| Old range nonbessemer, 51½% | 4.65 |
| Mesabi nonbessemer, 51½% | 4.50 |
| High phosphorus, 51½% | 4.40 |

### EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

| | |
|---|---|
| Foundry and basic, 56-63% | 9.00 to 10.00 |
| Copper-free low phos. 58-65% | nominal |

### FOREIGN ORE

Cents per units, alongside docks Atlantic ports

| | |
|---|---|
| Foreign manganiferous ore, 45-55% iron, 10-12% manganese | 12.00 to 12.50 |
| North African low phosphorus | 12.50 |
| Swedish basic, 65% | 10.50 |
| Swedish low phosphorus | 12.00 |
| Spanish and North African basic, 50 to 6% (nominal) | 11.50 to 12.00 |
| Newfoundland foundry, 55% | nominal |
| Tungsten future, short ton unit, duty paid | 15.25 to 15.50 |
| Chrome ore, 48-50%, long ton c.i.f. | $22.00 to 24.00 |

## MANGANESE ORE

Prices, not including duty, are cents per unit; cargo lots.

| | |
|---|---|
| Caucasion (52-55 per cent) | 30 to 32 cents |
| Indian (48-50 per cent) | 30 to 32 cents |
| Brazilian (46-48 per cent) | 29 to 31 cents |

## FLUORSPAR

85 and 5 per cent grade

| | |
|---|---|
| Washed gravel, Kentucky and Illinois mines, per net ton | $18.00 |
| Washed gravel, import duty paid east, tide., gross ton | $21.00 |

## REFRACTORIES

### FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

| | |
|---|---|
| Pennsylvania | $43.00 to 46.00 |
| Ohio | 43.00 to 46.00 |
| Illinois | 43.00 to 46.00 |
| Kentucky | 43.00 to 46.00 |
| Missouri | 43.00 to 46.00 |
| Maryland | 43.00 to 46.00 |
| Georgia and Alabama | 40.00 to 45.00 |

Second Quality

| | |
|---|---|
| Pennsylvania | 35.00 to 38.00 |
| Ohio | 35.00 to 38.00 |
| Illinois | 35.00 to 38.00 |
| Kentucky | 35.00 to 38.00 |
| Missouri | 35.00 to 38.00 |
| Maryland | 35.00 to 38.00 |
| Georgia and Alabama | 30.00 to 35.00 |

### SILICA BRICK

| | |
|---|---|
| Pennsylvania | 43.00 |
| Joliet, Ill., East Chicago, Ind. | 52.00 |
| Birmingham | 50.00 to 51.00 |

### MAGNESITE BRICK

Per Net Ton

| | |
|---|---|
| 9 x 4½ x 2½ | 65.00 |

### MAGNESITE

Net Ton Chester, Pa., and Baltimore base

| | |
|---|---|
| Dead-burned grain magnesite | 40.00 |
| Domes., Chewelah, Wash., base | $22.00 |

### CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

| | |
|---|---|
| 9 x 4½ x 2½ | 45.00 |

# Pig Iron

**Market Is More Active and Shipments Improve—Melters Postpone Contracts and Price Situation Is Shade Easier**

SALES and shipments of pig iron have increased since the dull year-end period. New orders are comparatively small, though the aggregate is encouraging, and a number of foundries have resumed operations, assuring larger shipments in January than in December. The improvement is general, but especially noted in western Pennsylvania, and in the Middle West where malleable plants are stepping up operations to supply new railroad and automotive requirements. Pittsburgh reports shipments to steelworks show marked gain. The week's sales at Cleveland increased 37 per cent to 22,000 tons. Westinghouse Electric & Mfg. Co., closed for tonnage at Cleveland and Trafford City, Pa. Against these favorable factors is subnormal first-quarter buying.

**PITTSBURGH, Jan. 7.**—Specifications for pig iron are heavier, with a moderate upturn in new business for prompt shipment. Orders are for small tonnages, but the aggregate is fairly high. Shipments to steelworks showed a marked gain in the past week. Iron foundries are gradually increasing production. The Uniontown, Pa., plant of Richmond Radiator Co. resumed operations after a shutdown since the first week in December. National Radiator Corp. is starting its plant at New Castle, Pa. American Rolling Mill Co.'s Butler, Pa., plant, which shut down the latter part of December, resumed production last week, raising operations this week to five out of ten open hearths. Merchant iron production continues light, with one stack in the valley and one in the Pittsburgh district in operation. Davison Coke & Iron Co. will resume operation of its Cherry Valley stack at Leetonia Thursday after five weeks' shutdown, and at the same time it will blow out its Neville island stack for relining. The market is steady, prices continuing $18.50 for basic and No. 2 foundry, and $19 for bessemer and malleable.

Basic pig iron prices, valley furnace, averaged $18.50 in December, and malleable $19, according to W. P. Snyder & Co. The sales averages have been unchanged since May, 1929. The company has decided to discontinue compilation of the averages, as a result of changes in market conditions in the past several years, particularly a large decrease in open market pig iron sales.

**Boston, Jan. 7.**—Sales of pig iron in the past week totaled about 2000 tons, of which the Mystic Iron Works booked 500 tons. The market is quiet. Buffalo furnaces hold to $17, base, furnace, for this district. The General Electric Co. has not yet closed on its recent inquiries for plants in this district.

**New York, Jan. 7.**—Pig iron sellers look for a revival in business about the middle of the month. Several tonnages are under negotiation, and the smaller foundries are showing more interest. Buffalo iron is unchanged at $17 to $17.50, base, and southern iron at $19 to $19.50, New York docks. One seller estimates that 35 to 40 per cent of first quarter requirements still is to be covered. General Electric Co. continues in the market for approximately 4000 tons for its various plants. New York Central has closed on 300 tons. A New York exporter has purchased 200 tons of No. 1X for South America. Pending inquiry is estimated at 10,000 tons.

**Philadelphia, Jan. 7.**—More activity is noted in pig iron. Largest inquiries are for low phos. Standard Steel Works Co. is inquiring for 3000 to 4000 tons and Baldwin Locomotive Works for 1000 tons for General Steel Castings Corp. An order for 500 tons of low phosphorus was placed by the Washington navy yard with Frank Samuel & Co. The total of foundry iron sales has increased. Prices are steady. United States Pipe & Foundry Co. started up its centrifugal department at Burlington on a 40 per cent basis, after being idle since Dec. 1. Reports show 1929 was the first year in a long time when soil pipe makers in this district shipped more than they made, reducing stocks 4000 to 5000 tons. Two thousand tons of Virginia foundry iron was sold at the unchanged price of $17.75, base, furnace.

**Buffalo, Jan. 7.**—Pig iron inquiry is increasing. Consumers are covering slowly and trying to get price concessions. Buffalo producers are quoting $17, base, furnace, on low silicon foundry iron in an effort to get some orders, ranging up to 3000 tons in the East. The district price is firm and unchanged. Bethlehem Steel Co. put a fifth furnace into production at Lackawanna this week. Ten stacks in the district now are active, and nine idle.

**Youngstown, O., Jan. 7.**—Small tonnage sales continue to be made for first quarter by valley furnaces. No. 2 foundry still is quoted $18.50, and malleable and bessemer $19. Basis iron is held at $18.50. The Hubbard stack of the Youngstown Sheet & Tube Co. will be put in blast again within a fortnight.

**Cleveland, Jan. 7.**—Moderate improvement is noted in the market for pig iron. Sales by Cleveland furnace interests increased to more than 22,000 tons in the past week, compared with 14,000 tons in the week preceding. Many melters do not wish to close, some of them having enough iron still due them on fourth quarter contracts to enable them to continue operating at the rates they expect for January and February. Others are buying

(*Concluded on Page* 48)

## Pig Iron Prices

**Per Gross Ton**

| | |
|---|---|
| Bessemer, valley furnace | $19.00 |
| Bessemer, del. Pittsburgh | 20.76 |
| Basic, valley furnace | 18.50 |
| Basic, Pitts., dist. fur. | 19.00 |
| *Basic, del., Pitts. | 19.63 to 20.13 |
| Basic del., eastern Pa. | 19.50 to 20.00 |
| Basic, Buffalo furnace | 18.50 |
| Malleable, valley furnace | 19.00 |
| Malleable, Pitts., dist. fur. | 19.50 |
| *Malleable, del. Pittsburgh | 20.13 to 20.63 |
| Malleable, Cleve. fur. for local del. | 19.00 |
| Malleable, Chicago furnace | 20.00 |
| Malleable, Buffalo furnace | 20.00 |
| Malleable, del. eastern Pa. | 21.26 to 22.26 |
| Malleable, Granite City fur. | 20.00 |
| No. 1 foundry, Chicago furnace | 20.50 |
| No. 1X, Eastern del., Phila. | 22.26 to 22.76 |
| No. 1X, Buffalo furnace | 21.00 |
| No. 2 foundry valley furnace | 18.50 |
| No. 2 fdy., Pitts. dist. fur. | 19.00 |
| *No. 2 foundry, del. Pittsburgh | 19.63 to 20.13 |
| No. 2 plain, Buffalo furnace | 19.50 |
| No. 2 foundry, Chicago furnace | 20.00 |
| No. 2 fdy., Cleve. fur. for local del. | 19.00 |
| No. 2 fdy., Granite City | 20.00 |
| No. 2 plain, del., Phila. | 21.26 to 21.76 |
| No. 2 plain, Virginia furnace | 17.75 |
| No. 2 plain, Buffalo, del. Boston | 21.91 to 22.41 |
| No. 2 plain, N. J., tidewater | 21.26 to 21.76 |
| No. 2 Alabama, Bir. base | 14.50 to 15.00 |
| No. 2 Tenn., Birmingham base | 14.50 to 15.00 |
| No. 2 Tenn., del. Cincinnati | 17.69 to 18.19 |
| No. 2 Alabama, del. Cincinnati | 17.69 to 18.19 |
| No. 2 Alabama, del. Cleveland | 20.51 to 21.01 |
| No. 2 Alabama, del., Chicago | 19.51 |
| No. 2 Alabama, del., St. Louis | 19.42 |
| No. 2 Ala., Phila., dock dely. | 19.25 to 19.75 |
| No. 2 Ala., Balt., dock dely. | 19.00 to 19.50 |
| No. 2 Ala., N. Y., dock dely. | 19.00 to 19.50 |
| No. 2 Ala., Boston, dock dely. | 20.21 |
| No. 2X, east, N. J., tidewater | 21.28 to 21.78 |
| No. 2X, eastern, del. Phila. | 21.76 to 22.26 |
| No. 2X, foundry, Buffalo furnace | 20.00 |
| No. 2X, Buffalo, del. Boston | 21.91 to 22.91 |
| No. 2X, Virginia furnace | 18.25 |
| Gray forge, Pitts. dist. fur. | 18.50 |
| *Gray forge, del. Pittsburgh | 19.13 to 19.63 |
| Low phos., standard, valley | 27.00 |
| Low phos., standard, Phila. | 24.76 |
| Low phos., copper bearing fur. | 23.00 to 24.00 |
| Charcoal, Superior, del., Chicago | 27.04 |

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63.00c, 76.00c and $1.13 per ton.

**CANADIAN PRICES**

| | |
|---|---|
| No. 1 foundry, del. Toronto | $23.60 |
| No. 1 foundry, del. Montreal | 25.00 |
| No. 2 foundry, del. Toronto | 23.10 |
| No. 2 foundry, del. Montreal | 24.50 |
| Malleable, del. Toronto | 23.60 |
| Malleable, del. Montreal | 25.00 |
| Basic, del. Montreal | 23.50 |

Silvery iron, Jackson county, O., furnace in per cents: 5—$22; 6—$22 to $23; 7—$23 to $24; 8—$24 to $25; 9—$25 to $26; 10—$27 to $28; 11—$29 to $30; 12—$31 to $32; 13—$33 to $34.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50; 17—$46.50.

# The Market Section

## Coke

**Connellsville Output 41 Per Cent Less Than Year Ago—Furnace Shipments Light**

QUIET conditions prevail in the coke market, though cold weather is an aid to producers in some districts. Beehive output in the Connellsville district continues downward. For the week ended Dec. 28 it was 41 per cent less than in the comparable period one year preceding. Foundries are releasing specifications more freely in eastern territory. Prices are steady.

**Pittsburgh, Jan. 7.**—Continuation of light operations at blast furnaces is dulling demand for beehive furnace coke. Spot orders and contracting are quiet. Prices are $2.60 to $2.65, but little tonnage is pending to provide a test. Demand for foundry coke is fair for this period, although a slight improvement is noted in comparison with December. Sales of heating coke are slightly below the seasonal average. Coke producers continue a downward adjustment of operations.

Beehive coke production in the Connellsville district in the week ended Dec. 28 totaled 33,240 tons, compared with 34,530 tons the preceding week and 56,300 tons the corresponding week of 1928.

**Boston, Jan. 7.**—Shipments of domestic coke are heavy and all ovens in this district are producing at a satisfactory rate. Buying of foundry coke is on a limited scale. Prices are steady.

**New York, Jan. 7.**—Foundry coke specifications are being released more freely. Prices show little change. By-product foundry coke is $9 to $9.40, delivered, Newark, N. J.; $11, delivered New England; and $9, delivered Philadelphia. Beehive foundry coke is easy at $3.50 to $4.85, Connellsville, and beehive furnace coke at $2.65 to $2.80, Connellsville, subject to occasional shading.

**Cincinnati, Jan. 7.**—Increased demand for by-product foundry coke is noted, specifications so far this month being comparable to November. Prices are unchanged.

**Chicago, Jan. 7.**—By-product foundry coke shipments are being resumed at a rate slightly above the latter part of December. Most contract buyers have obligated themselves for the first half on the basis of $8, ovens, and $8.75 for delivery in the Chicago switching district.

**St. Louis, Jan. 7.**—Sellers of metallurgical coke report quiet conditions. A number of plants, notably in the stove industry, are down for inventory and repairs, and they have deferred shipments. Demand from industrial users also has subsided. Prices are steady.

**Birmingham, Ala., Jan. 7.**—Coke production is steady and independent producers' stocks are small. Shipments are showing slight improvement. By-product foundry coke is firm at $5, base, Birmingham.

### Coke Prices

**Prices per Net Ton**

| | |
|---|---|
| **Beehive Ovens** | |
| Connellsville furnace | $2.60 to 2.65 |
| Connellsville foundry | 3.50 to 4.85 |
| New River foundry | 6.00 |
| Wise county foundry | 4.25 to 5.00 |
| Wise county furnace | 3.50 to 4.25 |
| **By-Product Foundry** | |
| Newark, N. J., del. | $9.00 to 9.40 |
| Chicago ovens | 8.00 |
| New England del. | 11.00 |
| St. Louis del. | 9.00 |
| Birmingham, ovens | 5.00 |
| Indianapolis del. | 8.25 |
| Ashland, Ky., ov., Connell. basis | 6.50 |
| Portsmouth, O. ov., Connell. basis | 6.50 |
| Buffalo ovens | 8.75 |
| Detroit ovens | 9.00 |
| Philadelphia, del. | 9.00 |

## Ferroalloys

**Demand for Spiegeleisen More Active —Prices Steady**

**New York, Jan. 7.**—Spiegeleisen demand is starting off the new year more actively, with sellers contemplating a substantial improvement as the month progresses. Prices are unchanged at $34, furnace, for domestic spiegeleisen, 19 to 21 per cent, subject to differentials on quantities, Specifications for ferromanganese also are more active with the market steady at $100 per gross ton, duty paid.

Contracts for special ferroalloys are coming to producers at a satisfactory rate. In a few instances contracts have been made for short periods. Tungsten and chrome ores are unchanged.

**Pittsburgh, Jan. 7.**—Specifications for ferroalloys continue slow, although some improvement is noted in ferromanganese. Contracting is completed, with the exception of several of the larger buyers. Ferrochrome is fairly active, reflecting demand for chrome alloy steels. Ferrotungsten continues strong, but in light demand. The market generally is $1.45 for smaller lots, with strength continuing in tungsten ore. Prices continue $104.79, delivered Pittsburgh, for ferromanganese and $34 for small lots of spiegeleisen.

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International wire rod cartel has voted to extend its existence until the end of 1931.

## Bolts, Nuts, Rivets

**Jobbers and Consumers Taking Better Tonnages After Inventory**

NUT AND BOLT PRICES, PAGE 44

**Pittsburgh, Jan. 7.**—Demand for bolts, nuts and rivets shows a slight improvement. Jobbers are taking heavier tonnage and consumers are adding moderately to stocks following completion of inventory. Railroads continue fair buyers. Prices are steady at 60 to 70 off for bolts and nuts and 3.10c, Pittsburgh, for large rivets.

**Chicago, Jan. 7.**—Specifications for bolts, nuts and rivets are gaining slowly. Implement and tractor works are leading in tonnage in the absence of automotive business. Carriage and machine bolts are quoted at 60 to 70 off list.

**Cleveland, Jan. 7.**—Orders for nuts, bolts and rivets are more numerous. In addition to some jobber business, one or two lots of automotive tonnage have developed. Structural rivets are fairly active. An Ohio locomotive builder recently ordered a liberal tonnage of rivets.

**Philadelphia, Jan. 7.**—Demand for bolts, nuts and rivets shows some improvement, accountable in some cases to a tendency to build up stocks. Prices remain firm and unchanged.

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## I. M. Wolverton Is Dead

I. M. Wolverton, 61, president and treasurer of the Mt. Vernon Bridge Co., Mt. Vernon, O., structural steel fabricator, died Jan. 6. He was graduated from University of Michigan in 1890 and became identified with the King Bridge Co., Cleveland. He later went with the Columbia Bridge Co. but has been affiliated with the Mt. Vernon Bridge Co., since 1899. Funeral services were held at Mt. Vernon Jan. 8.

### Ferroalloy Prices

(In dollars, except ferrochrome)

| | |
|---|---|
| *Ferromanganese, 78 to 82 per cent tidewater, duty paid | $100.00 |
| *Ferromanganese, del. Pittsburgh | 104.79 |
| Spiegeleisen, 19 to 21 per cent, domestic furnace spot† | 34.00 |
| *Ferrosilicon, 50 per cent, freight allowed, carloads | 83.50 |
| *Do., less carload | 88.50 |
| Do., 75 per cent | 130.00 to 15.00 |
| Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del. | 11.00 |
| Do., for spot delivery | 11.50 |
| Ferrotungsten, stand., lb. cont. | 1.45 to 1.50 |
| Ferrovanadium, 30-40 per cent, per lb., contained, on analysis | 3.15 to 3.65 |
| Ferro-carbon-titanium carload producer's plant, net ton | 160.00 |
| Do., one ton to carload | 170.00 |
| Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale Tenn., basis (18 per cent) | 91.00 |
| Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent) | 122.50 |

†Carloads. Differentials apply to large quantities.

*These prices contract, spot $5 higher.

# Scrap

**Consumers Resume Buying and Prices Reflect Interest—Some Grades Show Scarcity**

MORE interest in future supplies and release of several embargoes contribute to a better situation in iron and steel scrap. Bethlehem Steel Co. has stopped shipments to its Bethlehem plant until congestion can be relieved. Prices are showing some inclination to advance and dealers are buying more freely.

**Chicago, Jan. 7.**—More consumer inquiry for iron and steel scrap is developing. Indicating early needs, a number of consumers are showing more interest than for many weeks. Price offers from melters also have appeared. Virtually no tonnages have been closed by dealers, but spot carload orders are fair. Brisk coverage by dealers is reported, and competitive bidding for railroad scrap by dealers holds these sales above the recent consumer levels. Recent shortages in forging scrap are to be relieved shortly, as forging plants resume at generally increased operating rates. Demand for railroad malleable remains active, and offerings fail to meet demand. Heavy melting steel on the recent St. Paul list was closed at about $14, gross, delivered, but the generally quoted consumer range is $12.50 to $13. The Chicago & North Western list Saturday had only 200 tons of melting steel.

**New York, Jan. 7.**—Bethlehem Steel Co. has suspended all shipments on steel scrap to Bethlehem. This is the first such action this company has taken in considerable time and is attributable to congestion. It is said

# Iron and Steel Scrap Prices

**Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.**

## Steel Works Scrap

**HEAVY MELTING STEEL**

| | |
|---|---|
| Birmingham | 10.50 to 13.50 |
| Boston, dealers | 9.50 to 10.00 |
| Boston, No. 2 | 10.50 to 11.00 |
| Buffalo, No. 1 | 14.00 to 14.50 |
| Buffalo, No. 2 | 12.50 to 12.75 |
| Chicago | 12.50 to 13.00 |
| Cincinnati, deal. | 12.25 to 12.75 |
| Cleveland, No. 1 | 13.25 to 14.00 |
| Cleveland, No. 2 | 12.75 to 13.25 |
| Detroit, No. 1 deal. | 12.00 to 12.50 |
| Detroit, No. 2 deal. | 9.75 to 10.25 |
| East Pa., del. mill | 14.50 |
| N. Y., deal. R. R. | 11.50 to 11.85 |
| N. Y., deal. yd. | 7.75 to 8.00 |
| Pittsburgh, No. 1 | 16.25 to 16.75 |
| St. Louis, No. 1 | 13.00 to 13.50 |
| Valleys, No. 1 | 16.00 to 16.50 |

**COMPRESSED SHEETS**

| | |
|---|---|
| Buffalo (dealers) | 12.50 to 12.75 |
| Chicago | 11.00 to 11.50 |
| Cleveland | 12.50 to 13.00 |
| Detroit, dealers | 11.50 to 12.00 |
| E. Pa. new mat. | 13.00 to 13.50 |
| Pittsburgh | 16.50 to 17.00 |
| Valleys | 15.00 to 15.50 |

**BUNDLED SHEETS**

| | |
|---|---|
| Buffalo | 9.50 to 10.00 |
| Cincinnati, deal. | 10.25 to 10.75 |
| Cleveland | 11.00 to 11.50 |
| Eastern Pa. | 11.50 |
| Pittsburgh | 15.50 to 16.00 |
| St. Louis | 9.00 to 9.50 |

**SHEET CLIPPINGS LOOSE**

| | |
|---|---|
| Chicago | 7.50 to 8.00 |
| Cincinnati | 8.00 to 8.50 |
| Detroit, dealers | 8.50 to 9.00 |
| St. Louis | 9.00 to 9.50 |

**STEEL RAILS, SHORT**

| | |
|---|---|
| Birmingham | 13.00 to 14.00 |
| Boston, dealers | 8.50 to 10.00 |
| Buffalo | 17.50 to 18.00 |
| Chicago (3 feet) | 15.75 to 16.25 |
| Chicago, 2 ft. and under | 17.50 to 18.00 |
| Cincinnati, deal. | 17.50 to 18.00 |
| Detroit, dealers | 16.00 to 16.50 |
| Pittsburgh (3 ft.) | 19.50 to 20.00 |
| Pittsburgh, 2 feet and under | 20.00 to 20.50 |
| St. Louis | 17.50 to 18.00 |

**STOVE PLATE**

| | |
|---|---|
| Birmingham | 11.00 to 12.00 |
| Boston consumers | 9.00 to 9.75 |
| Buffalo | 12.00 to 12.25 |
| Chicago, net | 10.25 to 10.75 |
| Cinn., deal., net | 8.75 to 9.25 |
| Detroit, net, deal. | 9.00 to 9.50 |
| Eastern Pa. | 11.00 |
| N. Y., deal., mill | 7.75 to 8.00 |
| St. Louis | 12.00 to 12.50 |

**COUPLERS, SPRINGS**

| | |
|---|---|
| Buffalo | 17.00 to 17.50 |
| Chicago | 15.50 to 16.00 |
| Eastern Pa. | 19.50 to 20.00 |
| Pittsburgh | 20.00 to 20.50 |
| St. Louis | 14.50 to 15.00 |

**ANGLE BARS—STEEL**

| | |
|---|---|
| Chicago | 15.00 to 15.50 |
| St. Louis | 13.50 to 14.00 |

**LOW PHOSPHORUS**

| | |
|---|---|
| Buffalo, billets and bloom crops | 17.50 to 18.00 |
| Cleve. billet and bloom crops | 17.00 to 17.50 |
| Eastern Pa. | 21.00 to 22.00 |
| Pitts. billet and bloom crops | 21.50 to 22.00 |
| Pitts. sheet bar crops | 20.50 to 21.00 |

**FROGS, SWITCHES, GUARDS**

| | |
|---|---|
| Chicago | 13.00 to 13.50 |
| St. Louis | 14.00 to 14.50 |

**SHOVELING STEEL**

| | |
|---|---|
| Chicago | 12.50 to 13.00 |
| Cleveland | 11.00 to 11.50 |
| St. Louis | 13.00 to 13.50 |

## Iron Mill Scrap

**RAILROAD WROUGHT**

| | |
|---|---|
| Birmingham | 10.00 to 11.00 |
| Boston, dealers | 10.50 to 10.75 |
| Buffalo, No. 1 | 11.00 to 11.50 |
| Buffalo, No. 2 | 14.00 to 14.50 |
| Chicago, No. 1 | 13.20 to 13.75 |
| Chicago, No. 2 | 12.50 to 13.00 |
| Cincinnati, No. 2 | 12.25 to 12.75 |
| Eastern Pa. | 16.00 to 16.50 |
| N. Y., No. 1 deal. | 12.00 to 12.50 |
| Pittsburgh, No. 2 | 16.25 to 16.75 |
| St. Louis, No. 1 | 12.25 to 12.75 |
| St. Louis, No. 2 | 13.00 to 13.50 |

**SPECIFICATION PIPE**

| | |
|---|---|
| Boston | 8.00 to 9.00 |
| Eastern Pa. | 14.00 |
| New York, deal. | 9.25 to 9.75 |

**BUSHELING**

| | |
|---|---|
| Buffalo, No. 1 | 12.50 to 12.75 |
| Chicago, No. 1 | 10.75 to 11.25 |
| Cinn., No. 1 deal. | 10.00 to 10.50 |
| Cinn., No. 2 | 6.50 to 7.00 |
| Cleveland, No. 1 | 12.00 to 12.50 |
| Cleveland, No. 2 | 9.50 to 10.00 |
| Detroit, No. 1 new deal. | 10.75 to 11.25 |
| St. Louis, No. 1 | 9.25 to 9.75 |
| Valleys, new No. 1 | 14.25 to 14.75 |

**MACHINE SHOP TURNINGS**

| | |
|---|---|
| Birmingham | 6.00 to 7.00 |
| Boston, dealers | 6.00 to 6.10 |
| Buffalo | 9.00 to 9.50 |
| Chicago | 6.50 to 7.00 |
| Cincinnati, deal. | 8.00 to 8.50 |
| Cleveland | 9.50 to 10.00 |
| Detroit | 8.25 to 8.50 |
| Eastern Pa. | 11.00 |
| New York, deal. | 7.00 to 7.50 |
| Pittsburgh | 12.50 to 13.50 |
| St. Louis | 6.75 to 7.25 |
| Valleys | 11.50 to 12.00 |

**MIXED BORINGS, TURNINGS**
**For Blast furnace use**

| | |
|---|---|
| Boston, dealers | 5.50 to 5.75 |
| Buffalo | 11.00 to 11.50 |
| Cincinnati, deal. | 8.50 to 9.00 |
| Cleveland | 9.50 to 10.00 |
| Detroit, dealers | 9.75 to 10.00 |
| Eastern Pa. | 11.00 |
| New York, deal. | 7.00 to 7.50 |
| Pittsburgh | 11.50 to 12.00 |

**CAST IRON BORINGS**

| | |
|---|---|
| Birmingham, chem. | 13.00 to 13.50 |
| Birmingham, plain | 6.00 to 7.00 |
| Boston, chem. | 9.00 to 9.50 |
| Boston, dealers | 6.00 to 6.10 |
| Buffalo | 11.00 to 11.50 |
| Chicago | 9.25 to 9.75 |
| Cincinnati, deal. | 8.50 to 9.00 |
| Cleveland | 9.50 to 10.00 |
| Detroit, dealers | 9.00 to 9.50 |
| Eastern Pa. | 11.50 |
| Eastern Pa., chem. | 14.50 |
| New York, deal. | 7.00 to 7.50 |
| Pittsburgh | 11.50 to 12.00 |
| St. Louis | 9.00 to 9.50 |

**PIPE AND FLUES**

| | |
|---|---|
| Cincinnati, deal. | 9.00 to 9.50 |

**RAILROAD GRATE BARS**

| | |
|---|---|
| Buffalo | 11.00 to 11.50 |
| Chicago, net | 11.50 to 12.00 |
| Cincinnati | 9.50 to 10.00 |
| Eastern Pa. | 11.00 |
| New York, deal. | 7.50 to 8.00 |
| St. Louis | 11.50 to 12.00 |

**FORGE FLASHINGS**

| | |
|---|---|
| Boston, dealers | 8.00 to 8.50 |
| Buffalo | 12.50 to 12.75 |
| Cleve. over 10 in. | 11.00 to 11.50 |
| Detroit | 11.00 to 11.50 |

**FORGE SCRAP**

| | |
|---|---|
| Boston, dealers | 8.00 to 8.50 |
| Chicago | 17.25 to 17.75 |
| Eastern Pa. | 13.50 to 14.00 |

**ARCH BARS AND TRANSOMS**

| | |
|---|---|
| Chicago, net | 17.25 to 17.75 |
| St. Louis | 21.00 to 21.50 |

## Iron, Steel Works Scrap

**AXLE TURNINGS**

| | |
|---|---|
| Boston, deal. | 6.75 to 7.00 |
| Buffalo | 13.50 to 14.00 |
| Chicago steelworks | 10.50 to 11.00 |
| Cleveland | 12.00 to 12.50 |
| Eastern Pa. | 13.50 |
| Pittsburgh | 14.00 to 14.50 |
| St. Louis | 10.00 to 10.50 |

**STEEL CAR AXLES**

| | |
|---|---|
| Birmingham | 17.00 to 17.50 |
| Boston, ship point | 16.00 to 16.50 |
| Buffalo | 17.50 to 18.00 |
| Chicago | 17.65 to 18.20 |
| Eastern Pa. | 20.00 to 21.00 |
| Pittsburgh | 20.50 to 21.00 |
| St. Louis | 19.00 to 19.50 |

**SHAFTING**

| | |
|---|---|
| Boston, ship point | 13.50 to 14.00 |
| Chicago | 16.50 to 17.10 |
| Eastern Pa. | 19.00 |
| New York, deal. | 14.00 to 14.50 |
| St. Louis | 18.00 to 18.50 |

## Iron Foundry Scrap

**CAR WHEELS**

| | |
|---|---|
| Birmingham, iron | 11.00 to 12.00 |
| Boston, iron | 14.00 to 14.50 |
| Buffalo, iron | 12.50 to 13.00 |
| Buffalo, steel | 17.50 to 18.00 |
| Chicago, iron | 14.00 to 14.50 |
| Chi., rolled steel | 17.00 to 17.50 |
| Cincinnati | 12.00 to 12.50 |
| N. Y., iron, deal. | 10.50 to 11.00 |
| Pittsburgh, iron | 14.50 to 15.00 |
| Pittsburgh, steel | 20.00 to 20.50 |
| St. Louis, iron | 14.00 to 14.50 |
| St. Louis, steel | 16.00 to 16.50 |

**NO. 1 CAST SCRAP**

| | |
|---|---|
| Birmingham, cup. | 12.00 to 13.00 |
| Buffalo | 14.00 to 14.50 |
| Boston, textile | 14.00 to 14.50 |
| Chicago, mach. | 15.10 to 15.70 |
| Chicago, railroad | 14.30 to 14.85 |
| Chicago, agri. | 12.35 to 12.90 |
| Cincinnati, mach. cupolas, gross | 18.25 to 18.75 |
| Cleveland, cupola | 15.00 to 15.50 |
| Detroit, net, deal. | 11.50 to 12.00 |
| East Pa., cupola | 16.00 |
| N. Y. cup. deal. | 10.85 |
| N. Y., del. local foundries | 15.00 |
| Pittsburgh, cupola | 14.50 to 15.00 |
| San Fran., del. | 13.50 to 14.00 |
| Seattle | 14.50 to 14.75 |
| St. L. No. 1 mach. | 14.50 to 15.00 |
| St. Louis, No. 1 | 14.00 to 14.50 |

**HEAVY CAST**

| | |
|---|---|
| Boston | 10.50 to 11.00 |
| Buffalo, breakable | 10.25 to 10.75 |
| Cleve., breakable | 12.00 to 12.50 |
| Detroit, auto, net dealers | 12.00 to 13.00 |
| Detroit, break. deal | 9.50 |
| Eastern Pa. | 14.00 to 14.50 |
| New York, deal. | 9.75 to 10.50 |
| Pittsburgh | 11.50 to 12.00 |

**MALLEABLE**

| | |
|---|---|
| Boston, railroad | 16.50 to 17.00 |
| Buffalo | 17.00 to 17.50 |
| Chicago, agri. | 13.75 to 14.25 |
| Chicago, railroad | 16.50 to 17.00 |
| Cinn., R. R. deal. | 15.25 to 15.75 |
| Cinn., agri., deal. | 14.25 to 14.75 |
| Cleveland, rail | 17.00 to 17.50 |
| Detroit auto deal. | 14.50 to 15.00 |
| St. Louis, rail | 14.00 to 14.50 |

## Miscellaneous Scrap

**RAILS FOR ROLLING**
**5 feet and over**

| | |
|---|---|
| Birmingham | 13.00 to 14.00 |
| Boston | 10.00 to 10.50 |
| Buffalo | 14.00 to 14.50 |
| Chicago | 14.50 to 15.00 |
| Eastern, Pa. | 15.50 |
| New York | 10.50 to 11.00 |
| St. Louis | 14.50 to 15.00 |

**LOCOMOTIVE TIRES**

| | |
|---|---|
| Chicago, cut | 18.00 to 18.50 |
| St. Louis, No. 1 | 14.50 to 15.00 |

**LOW PHOS. PUNCHINGS**

| | |
|---|---|
| Chicago | 15.00 to 15.50 |
| Pittsburgh | 19.00 to 19.50 |

that possibly two weeks will be required to handle these cars and those now in transit. The embargo does not affect shipments of borings and turnings to that point. The leading Harrisburg, Pa., consumer has lifted its ban after a suspension of several weeks. Dealers' prices here are unchanged with demand still sluggish.

**Boston, Jan. 7.**—Lack of business continues to hold scrap prices to a limited range. Better sentiment in the Pittsburgh district has caused advance of three or four grades. Pittsburgh is buying cautiously.

**Philadelphia, Jan. 7.**—Dealers have declined to sell heavy melting steel at $14.50, delivered eastern Pennsylvania. Several fair tonnages were bid at this figure. Dealers are holding for $15 on account of scrap coming in more slowly. Action of Bethlehem in holding up shipments to Bethlehem, Pa., has tended to nullify the firmer tendency. Prices are unchanged.

**Buffalo, Jan. 7.**—There is a good demand for borings and turnings, chemical borings, rolled steel wheels and knuckles and couplers. Some consumers are permitting dealers to resume shipments of stove plate and No. 1 cast after long suspension. The heavy melting steel market is inactive.

**Pittsburgh, Jan. 7.**—Strength in the scrap market has developed into higher prices in steelmaking grades. Sales have been made of heavy melting steel at $16.50 to $16.75 while a large tonnage of compressed sheets sold at $17. Machine shop turnings, nominal for sometime, were up sharply on recent sales with borings and rails also $1 to $1.50 higher.

**Cleveland, Jan. 7.**—Sentiment in iron and steel scrap is bullish, despite the fact that releases still apply only to blast furnace material. Stocks are not over-abundant. Dealers are now paying $13.25 to $14 for No. 1 heavy melting steel and around $12.75 for No. 2. Compressed sheets bring $12.50 to $13 and machine shop turnings $10. Some pickup in demand for low phos and specialty grades for foundry consumption is noted.

**Cincinnati, Jan. 7.**—Slight price advances indicate a stronger market for iron and steel scrap. Heavy melting steel and No. 1 railroad wrought were advanced 25 cents, to $12.25 to $12.75. Demand has not gained much but supplies of wanted grades are somewhat less abundant.

**St. Louis, Jan. 7.**—Actual purchasing of iron and steel scrap continues slack. Available supplies in all positions are moderate, and middlemen are chary of selling short at present prices. There has been improvement in the call for rolling mill grades, which are in scant supply in this area. Upward revisions were made in steel car axles, arch bars, shafting and some other grades which are urgently needed.

**Birmingham, Ala., Jan. 7.**—No improvement is noted in iron and steel scrap and little hope is expressed for early activity. Heavy melting steel is being held at $10.50 to $13.50.

**Toronto, Ont., Jan. 7.**—Consumers of iron and steel scrap are withholding contracts for future delivery and only a small volume of business has been closed recently for spot delivery. Demand for steel scrap is absent but improvement is developing in iron grades with machinery cast still well in the lead. Prices are unchanged.

## Canadian Scrap

**Dealers' Buying Prices**

**MONTREAL**

**Per Gross Ton**

| | |
|---|---|
| Iron axles | $22.00 |
| Steel axles | 20.00 |
| Car wheels | 16.00 |
| Stove plate | 13.00 |
| Wrought pipe | 6.00 |
| Turnings | 6.50 |
| Heavy melting steel | 8.00 |

**TORONTO**

| | |
|---|---|
| Steel axles | 15.00 |
| Iron axles | 17.00 |
| Heavy melting steel | 9.50 |
| Turnings | 7.50 |
| No. 1 mach. cast (net) | 16.00 |
| Malleable (net) | 12.50 |

## Semifinished Steel

**Lower Prices Reported on Sheet Bars —Consumers Slow to Close**

SEMIFINISHED STEEL PRICES, PAGE 44

**Pittsburgh, Jan. 7.**—Incoming tonnage in semifinished steel shows only a slight improvement. Consumers have been slow to place new business despite a $1 reduction in billets, sheet bars and slabs. The market generally is quotable at $34 for these grades, with forging billets $39. Some lower prices are reported on sheet bars although there have been few large tonnages to test the market. Wire rods continue $40, with skelp generally 1.85c.

**Philadelphia, Jan. 7.**—Billet prices in this district have been reduced $1 a ton to meet western market levels. Rerollers now are $34, base, Pittsburgh, and forging quality $39.

**Youngstown, O., Jan. 7.**—Steadily increasing orders for sheets and strip has brought out more demand for sheet bars and billets. Important producers have been unable to supply enough sheet bars for certain specified delivery dates. Billets, sheet bars and slabs hold at $34, Pittsburgh and Youngstown.

**Cleveland, Jan. 7.**—Demand for sheet bars, billets and slabs has improved slightly, and the leading merchant producer here has increased operations. All three grades continue to be quoted $34, Cleveland or Youngstown, although reports are heard of an easier situation in sheet bars, following the lower trend of sheet prices.

**Chicago, Jan. 7.**—A number of first quarter contracts for sheet bars and rerolling billets have been closed at $35, base, Chicago. It is stated here that the $35 quotation has prevailed in forward contracting thus far.

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Federal Steel Corp., Detroit, has changed its capital from 60,000 shares to 200,000 shares no par value.

## Pig Iron

(*Concluded from Page* 45)

small lots for prompt shipment, anticipating lower prices. While there is considerable hesitancy in new buying, shipments this month will be larger than in December. The Westinghouse Electric & Mfg. Co. closed with Cleveland producers for a tonnage for its Cleveland plant for first quarter. Cleveland prices are reported steady, at $18.50, base, furnace, for shipment to outside points, and $10, base, for local delivery.

**Cincinnati, Jan. 7.**—An increase in pig iron buying has been noted since the holidays, the total bookings being 5250 tons. Inquiries for 3500 tons are current. Orders so far represent far less than one-half of normal first quarter requirements. New business included 500 tons of northern iron sold to a central Indiana melter, 500 tons of northern for a central Ohio firm, 500 tons of silvery iron in two lots, and 1000 tons for a Cincinnati consumer. The Lima Locomotive Works, Lima, O., is in the market for 1000 tons of iron, and an undisclosed Ohio melter wants 2000 tons.

**Chicago, Jan. 7.**—Fair tonnage of pig iron is being placed for first quarter, but contract orders for that period are far below normal. Shipments are being resumed in heavier volume. Much first quarter contract tonnage is expected to be placed in the Chicago-Milwaukee territory in the next few weeks. The price governing spot and forward tonnage is $20, Chicago furnace, for the base grades. A northeastern Illinois melter is inquiring for 1000 tons of foundry iron. Several malleable plants in this district are stepping up operations because of railroad supply and automotive releases. Some steelworks resale tonnage is being placed in small lots under the market. Sellers of silvery iron here are quoting a spread of $1 on all grades from 6 per cent up, minimum prices being $1 less than a week ago.

**St. Louis, Jan. 7.**—Inquiries for pig iron for first quarter have increased, but the total volume is below that of a year ago and purchasing is not of impressive proportions. According to sellers, a number of important users are awaiting developments in general business during the next few weeks. Release of railroad equipment orders is expected to renew activities at mills and foundries. Some malleable shops have received specifications on automotive materials, and have increased operations. Prices are steady.

**Birmingham, Ala., Jan. 7.**—Large consumers of pig iron have indicated their requirements for first quarter will be heavy. Furnace interests report a fairly good start has been made on the year's business.

**Toronto, Ont., Jan. 7.**—About 60 per cent of Canadian melters have covered for first quarter. Inquiries are appearing and producers look for more business about the middle of this month. Most foundries are well supplied with orders. Prices are firm.

# Bars

**Specifications Improve and Production Is Increased, but Lags Behind Year Ago**

CONSUMERS of soft steel and alloy steel bars are increasing specifications and mills are operating at a better rate, though they still are below the average of a year ago. Some users have been caught without material and are asking immediate shipment. Western mills are profiting from agricultural implement activity. Prices show strength at the prevailing levels.

BAR PRICES, PAGE 43

**Chicago, Jan. 7.**—Bar mill specifications have picked up appreciably and operations now are 65 to 70 per cent, against not much over 40 per cent during the holidays. Forging plants are resuming at nearly full operations this week, partly due to some automotive releases. One finished steel producer reports specifications the best in nearly six months, while first quarter contract sales are about in normal volume. Reports from several farm equipment works indicate favorable prospects for all implements, and a record year for tractor sales. A number of finished steel buyers are exerting pressure for shipment on emergency orders. Alloy steel bar mill operations show little gain, the rate varying at 35 to 50 per cent. Bar iron mill operations are picking up because of growing orders from car building shops. Quotations for soft steel bars are at 2.00c, Chicago.

**New York, Jan. 7.**—Steel bars are holding at 1.90c, Pittsburgh, with demand slightly accelerated.

**Philadelphia, Jan. 7.**—Demand for steel bars shows considerable improvement since the turn of the year and is now up to fourth quarter average with 1.90c, base, Pittsburgh, fairly firm, although occasionally shaded on large tonnages.

**Pittsburgh, Jan. 7.**—Improved releases for merchant bars are noted since Jan. 1. Most automotive interests are preparing to renew or increase operations and specifications are moderately improved over the light December buying. This is particularly true of alloy steel bars. The market on the latter is firm at 2.65c. On merchant bars the market generally is 1.90c, Pittsburgh, despite occasional reports of lower prices. Requirements of consumers other than automotive are fair for this period, but aggregate tonnage is off from the volume of a year ago.

**Cleveland, Jan. 7.**—Most sellers of soft steel bars report moderate improvement in demand. The rate of December is being bettered but that of last January is not equaled. Much of the improvement is attributed to the automotive industry. Local makers quote 1.85c, base, Cleveland, or 1.875c, delivered. Preferential customers do better. Some outside mills quote 1.90c, base, Cleveland.

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**Labor trouble in Australia has reduced production of iron and steel. Tonnage by the Broken Hill plant in October was 11.500 tons of iron, compared with 31,250 tons in October, 1928. Steel tonnage declined from 29,500 tons to 17,500 tons.**

## Solicit Funds To Honor Myron T. Herrick

Friends of the late Myron T. Herrick, twice ambassador to France, who died in 1929, are being asked to subscribe $30,000 to $40,000 for the endowment of Herrick Hall in the American Legion Memorial building now being completed in Paris. Ambassador Herrick, long a resident of Cleveland and active in Ohio politics, was for many years identified with the National Carbon Co. and was chairman of the Union Carbide & Carbon Corp., which acquired it. Through his financial relationships he was associated with many industrial projects.

On the committee which is endeavoring to raise funds for Herrick Hall are Samuel Mather, Andrew Squire, Chester C. Bolton, Newton D. Baker, John A. Penton, Robert Lindsay, Dudley S. Hard and Dale R. Brown. In France the President, Premier Tardieu and former Premier Briand are active in promoting a memorial to the late ambassador.

## Form Mining Company

Pittsburgh, Jan. 7.—The Snyder Mining Co. has been incorporated to take over the operation of the Mesabi range iron ore mines of the Shenango Furnace Co., which are jointly controlled by the Shenango company and Crucible Steel Co. of America. Operations will be directed by present Shenango officials.

## May Buy Reeves Plant

Birmingham, Ala., Jan. 7.—Chicago Bridge & Iron Works, Chicago, is reported negotiating for the Birmingham plant of the Reeves Bros. Co., structural steel fabricator, Alliance, O.

## Talk Metals Code Feb. 6

Washington, Jan. 7.—The trade practice conference of the federal trade commission for the nonferrous metal industry will be held here Feb. 6, under Commissioner Ferguson.

# Plates

**Market Is More Active, Mill Operations Revive—Car Shop and Pipe Fabricators Busier**

FOLLOWING the slow action in plate business during the year-end season, specifications and mill operations have been accelerated. In the Middle West mills are operating at about 70 per cent, with larger orders from car shops and pipe line fabricators. Demand in all districts shows moderate improvement. Standard Oil of New York is inquiring for a substantial tonnage.

PLATE PRICES, PAGE 43

**Chicago, Jan. 7.**—Plate mill specifications are growing, due partly to increased orders from car shops. Operations have been stepped up from about 60 per cent during the holidays to close to 70 per cent. Shipments of skelp and plates for pipe line fabrication are being resumed at a slightly heavier rate. A number of encouraging tonnage plate orders have been received. Mills are in comfortable position as regards first quarter contracting. Prices quoted are on the basis of 2.00c, Chicago.

**New York, Jan. 7.**—Plate demand is improving, with the market firm at 2.00c to 2.05c, Coatesville, Pa. Tank work is featured by a heavy inquiry from Standard Oil Co. of New York, for Staten island. A large tonnage also is noted in the Chesapeake & Ohio's locomotive inquiry, which now calls for 50 heavy locomotives, 80 switch engines and 55 tenders. American Locomotive Co. has booked 2500 tons of 48-inch pipe for Detroit, this business being awarded through Mark Hanna, general contractor.

**Philadelphia, Jan. 7.**—Plate demand shows some improvement, eastern mills again operating at 60 to 65 per cent. The price generally is 2.00c to 2.05c, base, Coatesville, but this level is shaded occasionally for attractive lots. Negotiations for new ships recently reported appear to be halted temporarily.

**Pittsburgh, Jan. 7.**—Plate demand is fairly steady, although the slight change during the past week has been towards improvement. Buying is fairly well distributed among miscel-

laneous consumers. Barge builders reduced their backlogs during the fourth quarter, and though recent awards have been light prospects are regarded as favorable for improved business during the next two months. The Chicago Bridge & Iron Works was low bidder on 16 barges for the Rock Island office of the United States engineers, requiring 1300 tons of plates and shapes. Fabricators are figuring on a fair volume of business but recent awards have been light. Occasional reports are heard of lower prices, although the market generally remains 1.90c, Pittsburgh.

**Cleveland, Jan. 7.**—Some fairly attractive plate orders recently have come from shipbuilding plants and locomotive builders. Several orders were received late in December for shipment this month. Small tank and container manufacturers are more active. Specifications against first quarter contracts have started. The price is 1.90c, base, Pittsburgh.

### CONTRACTS PLACED

2500 tons, 48-inch steel pipe for Detroit, through Mark Hanna, that city, to American Locomotive Co.

200 tons, Washington state license plates, to United States Steel Products Corp.

196 tons, 20-inch shore pipe for United States engineers, Sacramento, Calif., to Pacific Coast Engineering Co.

140 tons, pipe line, La Mesa, Lemon Grove and Spring Valley irrigation district, La Mesa, Calif., to unnamed interest.

### CONTRACTS PENDING

5200 tons, 36 and 40-inch welded steel pipe line, San Diego, Calif.; Western Pipe & Steel Co. low bidder.

398 tons, 24 and 36-inch hammerwelded or lapwelded steel pipe, Los Angeles; bids Jan. 3.

398 tons, 24 and 36-inch hammerweld pipe, Los Angeles; bids received.

Unstated tonnage, tank work on Staten island, New York; bids asked.

## Austin Co. To Increase 1930 Purchases

Purchases of building materials by the Austin Co., Cleveland, for 1930 will show an increase of 20 per cent over 1929, according to W. J. Austin, president. Negotiations now are under way for a part of these materials, which include 25,000 tons of structural steel, 20,000 tons of reinforcing steel, 300 tons of corrugated steel roofing and siding, 1000 tons of rivets, more than 1,500,000 square feet of steel sash, 750,000 square feet of steel roofing decks, 500,000 square feet of wire mesh and 1,000,000 barrels of cement.

## Merger Is Consummated

Youngstown, O., Jan. 7.—Republic Iron & Steel Co. has formally taken over the Union Drawn Steel Co., Beaver Falls, Pa., following an audit, appraisal and approval by stockholders. E. S. Hoopes, president of the Union Drawn company, continues in charge. The acquisition is as of Jan. 1.

# Pipe

**Municipalities Buy Cast—Prices Hold—Milwaukee Divides 8118 Tons—Detroit Takes 2500 Tons**

OPEN winter makes for active cast pipe buying. Milwaukee closed on 8118 tons; Pawtucket, R. I., on 1250 tons. Los Angeles opened bids on 5403 tons and San Diego, Calif., on 3400 tons. Prices are stronger. Public utility interest is high. Small orders rule in steel pipe, Detroit placed 2500 tons of 48-inch with a locomotive builder. Other tubular activity restricted.

PIPE PRICES, PAGE 44

**New York, Jan. 7.**—Sellers of merchant pipe report conditions more satisfactory, the resale situation being particularly gratifying. Mark Hanna, Detroit, contractor, placed 2500 tons of 48-inch steel pipe for that city with the American Locomotive Co.

Consolidated Gas Co., New York, is inquiring for approximately 3000 tons of steel pipe.

**Boston, Jan. 7.**—Utility interests, about to place 1930 pipe requirements, brighten the pipe producers' outlook considerably. While one utility has withdrawn its inquiry, expecting a lower price later, others keep their inquiries alive and Pawtucket, R. I., awarded 1250 tons. Manchester, N. H., opened bids Jan. 2 on 500 tons and found R. D. Wood & Co. low. List prices are being adhered to and makers are not inclined to offer concessions on large diameters. Private business is relatively heavy because of the open winter.

**Pittsburgh, Jan. 7.**—Pipe business shows no change since Jan. 1. Little tonnage had been held up awaiting the new month and producers consequently lack this material to improve current shipments and operations. Jobbers' stocks have been reduced to no greater extent than formerly and merchant pipe demand generally awaits the spring upturn in building operations. Demand from the oil country is slow, although this is usual at this season. Boiler and locomotive tubing hold to about their former demand, while automotive requirements of mechanical tubing are only slightly heavier. Prices are steady. Mill operations are unchanged at 40 per cent.

**Cleveland, Jan. 7.**—Activity in buttweld and lapweld steel pipe is confined to small lots to replenish jobber stocks and bring them into balance. These usually run from 20 to 75 or 100 tons at a time. Some public utility work is scheduled to develop in the early spring. Shaker Heights, O., council decided to install a sewer culvert from the westerly limits of the village to Avalon road along Kingsbury creek.

**Chicago, Jan. 7.**—Public utility inquiry for iron pressure pipe is not expected to take form in important volume for several weeks. Scattered carload and less-than-carload tonnage is reported. Milwaukee divided 8118 tons of cast pipe among United States Pipe & Foundry Co., James B. Clow & Sons, and Glamorgan Pipe & Foundry Co. Prices for the smaller diameters show some irregularity.

**Birmingham, Ala., Jan. 7.**—Cast pipe shops have resumed operations, though production is not yet normal. Lettings received represent considerable tonnage and spring tonnage has not been reached. Stocks are not being made up in advance. Pig iron stocks are low in pipe shop yards.

### CONTRACTS PLACED

8000 tons of pipe for Milwaukee, awarded Jan. 2, 3500 tons 8-inch and 500 tons 6-inch to United States Pipe & Foundry Co. @ $42.50; 2500 tons 12-inch, to James B. Clow & Sons @ $42.75; 1500 tons 16-inch, to Glamorgan Pipe & Foundry Co. @ $42.50; 500 tons of special castings to Municipal Foundries Inc., Milwaukee @ $84; and 50 hydrants, to R. D. Wood & Co. @$57.95. Also 118 tons 36-inch, to United States Pipe & Foundry Co. @ $42.50.

2650 tons, Los Angeles, allocated as follows: 489 otns of 16-inch class C, to National Cast Iron Pipe Co., and 2161 tons of 24-inch class C to American Cast Iron Pipe Co.

1250 tons, 6 to 24-inch, 1930 requirements, Pawtucket, R. I., to Warren Foundry & Pipe Co.

175 tons, 6 to 22-inch class B, sewer project, San Clemente, Calif., to Robinson & Roberts.

139 tons, 4 to 10-inch class 150, Modesto, Calif., to United States Pipe & Foundry Co.

134 tons, 2 to 8-inch class B, street improvement project, Santa Ana, Calif., to Griffith Co.

125 tons, 6 to 12-inch, New Bedford, Mass., to United States Pipe & Foundry Co.

100 tons, 6-inch, Salem, Mass., to Warren Foundry & Pipe Co.

100 tons, 6-inch, Attleboro, Mass., to United States Pipe & Foundry Co.

#### STEEL PIPE ORDERS

5000 tons, steel merchant pipe in miscellaneous sizes, 1930 requirements of Public Service Corp. of New Jersey, Newark, N. J., to unstated interests.

2500 tons, 48-inch steel pipe for Detroit, to American Locomotive Co.

### CONTRACTS PENDING

3400 tons, Otay pipe line, San Diego, Calif., 36-inch class B; bids opened.

2753 tons, 6 and 8-inch class 150, Los Angeles; bids received.

900 tons of pipe and special castings for Wauwatosa, Wis.; bids about to be taken by F. A. Torkelson, city engineer.

736 tons, 4 to 12-inch class B, improvement of Lido island, Newport Beach, Calif.; bids Jan. 6.

500 tons, 6 to 12-inch cast water pipe for Minneapolis; bids being taken.

500 tons, 6 to 16-inch, Manchester, N. H., bids opened Jan. 2; R. D. Wood & Co., low bidder.

426 tons, 2 to 8-inch class 150, improvement of

Villa park, Santa Ana, Calif.; bids Jan. 14.
140 tons, 4 to 8-inch class B for West Salem, Oreg.; bids Jan. 7.
Unstated tonnage, Brockton, Mass., to be placed at early date.
Unstated tonnage, pipe for 4000 lineal feet of 4-inch water mains for Viroqua, Wis.; bids close Jan. 14.

**STEEL PIPE PENDING**

3000 tons of steel pipe, Consolidated Gas Co., New York.

## Tin Plate

**Price Revised to $5.25—Specifications in Good Volume**

TIN PLATE PRICES, PAGE 44

**Pittsburgh, Jan. 7.**—Tin plate specifications continue in good volume and general activity makes a favorable comparison with conditions a year ago. The tin plate price for the first half of 1930, previously named as $5.35, has been reduced to $5.25, as the result of price shading. Some additional contracting has been done and in most instances the tonnage is equal to or larger than the volume of the corresponding 1929 period. Canmakers look for an active year and one that will approximate the 1929 volume. Operations have improved and average 75 to 80 per cent.

**New York, Jan. 7.**—Sellers of tin plate have adjusted their prices to the new figure of $5.25 per base box, Pittsburgh. This applies to all first half contracts.

Standard Oil Co. of New York has closed for 50,000 base boxes of tin plate.

## Furniture Orders Fall

Washington, Jan. 7.—November shipments of steel furniture slumped from October and were lower than November, 1928. Department of commerce figures also reveal than 11-month totals were less in 1929 than 1928. Following are monthly comparisons:

| | Business Group | | Shelving | |
|---|---|---|---|---|
| | Orders received | Shipments | Orders received | Shipments |
| 1928 | | (In Dollars) | | |
| Nov. | 2,675,664 | 2,854,312 | 875,354 | 915,640 |
| Total, 11 mo. | 32,363,472 | 31,926,273 | 8,772,477 | 8,505,702 |
| Dec. | 3,610,645 | 3,117,139 | 828,555 | 791,376 |
| Total, 1928 | 35,974,117 | 35,043,412 | 9,601,032 | 9,297,078 |
| Jan. | 3,892,651 | 3,614,961 | 1,099,575 | 901,970 |
| Feb. | 3,060,290 | 3,242,581 | 919,557 | 974,305 |
| March | 2,883,716 | 2,923,363 | 1,145,632 | 1,109,876 |
| April | 2,880,395 | 2,844,938 | 1,095,329 | 1,131,362 |
| May | 2,814,423 | 2,783,992 | 1,120,990 | 1,989,120 |
| June | 2,521,630 | 2,573,674 | 958,866 | 920,355 |
| July | 2,559,991 | 2,624,552 | 939,057 | 867,496 |
| Aug. | 2,417,725 | 2,482,594 | 931,468 | 889,947 |
| Sept. | 2,290,133 | 2,333,984 | 879,610 | 842,635 |
| Oct.* | 2,848,741 | 2,983,615 | 927,578 | 979,236 |
| Nov. | 2,900,452 | 2,631,079 | 801,223 | 859,697 |
| Total, 11 mo. | 31,070,147 | 31,039,333 | 10,818,885 | 10,465,999 |

*Revised.

Officials of the Auburn Foundry Corp., Auburn, Ind., have filed papers with the secretary of state in Indianapolis evidencing final dissolution.

## Sheets

**Market Is More Active, and Mill Operations Are Increased—Prices $1 to $2 Lower**

DEMAND for sheets has increased considerably in comparison with December, the automotive, steel furniture and other lines being more active and releasing specifications. Some valley mills are having difficulty in meeting all the demands for prompt shipments, though production in that district as elsewhere has stepped up. Prices of most grades are on a lower level.

SHEET PRICES, PAGE 43

**Pittsburgh, Jan. 7.**—Incoming sheet tonnage is in fair volume from nearly all industries with the exception of the automotive group. Demand by the latter shows improvement over the slow December rate but is running considerably below the volume of a year ago. Sheet tonnage for freight car construction, metal furniture and hardware industries is in fair volume. Shipments this month will show a gain over December, material held up until after the first of the year now going forward. Operations average 60 to 70 per cent, compared with 50 per cent at the end of the year. Concessions recently developed in prices of various grades are no more pronounced than formerly, but the market lacks strength. Black sheets generally are 2.75c, Pittsburgh, although occasional lower prices are heard. No revision has been made in the price of tin mill black following the recent reduction in the price of tin plate and this grade continues 2.90c to 3.00c. Galvanized is 3.40c on the larger portion of current tonnage. Blue annealed sheets are 2.25c to 2.35c, with plates 2.10c to 2.20c. Autobody has settled to 3.90c on larger tonnages although 4.00c still is quoted. Furniture sheets remain 4.00c.

**New York, Jan. 7.**—More sheet tonnage appeared in the market in the past week than in some time, but prices generally declined. Galvanized sheets now are 3.40c, Pittsburgh. Sellers of black sheets in most cases are quoting 2.75c, Pittsburgh, but 2.70c is being done. Blue annealed plates are holding at 2.10c to 2.20c, Pittsburgh, with the lower figure the more representative. Blue annealed sheets are 2.25c to 2.35c.

**Philadelphia, Jan. 7.**—Sheet specifications have improved, but are considerably below the average of the last quarter. Blue annealed prices are easier, the current range being 2.10c to 2.20c on plates and 2.25c to 2.35c on sheets, base, Pittsburgh, with concessions in certain instances.

Hot strip over 24 inches wide generally brings $2 less a ton than blue annealed. Galvanized sheets are 3.30c to 3.35c, base, Pittsburgh, and one pass, cold rolled 2.65c to 2.70c.

**Youngstown, O., Jan. 7.**—A sharp spurt is noted in demand for early delivery of steel sheets. Independent mills are operating this week at 75 per cent, against 59 per cent last week. Demand for quick shipment of autobody, common black and blue annealed sheets, largely from automobile partsmakers, is difficult to satisfy. Some makers last week received a larger volume of specifications than in the past three months, especially for autobody material. Furniture builders also are beginning to specify more freely. Quotations do not appear so firm as formerly. In some instances mills have offered black sheets at 2.70c, and even 2.65c, while rumors not confirmed of lower figures have been heard from the Detroit district. Autobody sheets have been sold as low as 3.90c, although 4.00c still is asked by some. Furniture sheets have been taken at 4.00c. Blue annealed sheets appear to be bringing 2.20c.

**Cleveland, Jan. 7.**—A local automobile body producer has released sheet and other steel tonnage for 50,000 to 75,000 bodies. Demand from other lines also is improving. Prices are easier. Full finished sheets are 3.90c, base, Pittsburgh. The spread in black sheets is wider. One maker adheres to 2.85c and has taken a few contracts on that basis, but others quote 2.75c regularly, and 2.65c has appeared in a few instances. Galvanized is 3.40c. Blue annealed from jobbing mills is firm but from continuous mills is offered at lower prices.

**Cincinnati, Jan. 7.**—Production in district sheet mills remains at about 55 per cent of normal. Some new contracts have been booked and mills anticipate an early increase in production schedules.

**Chicago, Jan. 7.**—Sheet mill specifications are being increased slightly but not sufficiently to step up operations above 40 to 50 per cent for the district. First quarter contracting is said to be fully up to normal. Mill prices are unchanged at 3.50c to 3.60c for No. 24 galvanized; 2.85c for No. 24 black; 2.30c for No. 10, and 2.45c for No. 13 blue annealed.

**St. Louis, Jan. 7.**—Following the holidays, buying and specifications in sheets have quickened. Inventory work, however, still is holding down activity. There is a good call for sheets from manufacturers of furniture. Prices are unchanged.

Steel production in Czechoslovakia during October was slightly greater than in September but pig iron production was slightly less.

# Structural Shapes

**Number of Large Lettings Is Disappointing—Civic, Utility and Railroad Inquiries Involve Heavy Tonnages—Prices Steady**

LARGE tonnage structural lettings expected shortly after Jan. 1 have not materialized as yet. Outstanding awards include a few below 5000 tons apiece, such as a 4200-ton office building, New York, a 3800-ton telephone building in Texas, a 2600-ton viaduct in Philadelphia, a 1250-ton club at Seattle, and a 1100-ton hotel annex at New York. Prospects, however, are bright since much civic, public utility and railroad work including grade elimination is up. Pennsylvania's electrification program in the East, involving 12,600 tons, will probably be placed before the week is out. A New York bank calls for 2000 tons; an apartment there, 1600 tons; and a warehouse at Philadelphia, 1200 tons. Fabricating shops operate well on regular specifications.

STRUCTURAL SHAPE PRICES, PAGE 43

**Chicago, Jan. 7.**—First quarter sales of structural material have been in normal volume. Specifications are aided by demands from the car shops for light shapes against recent car orders, and from the implement and tractor builders. Public utility work looms in importance. Five railroads plan to spend about $6,500,000 on grade separation work in Chicago during 1930. Pennsylvania may spend up to $5,000,000 in track elevation, and other roads planning extensions are: Santa Fe, Chicago & North Western, Illinois Central, Baltimore & Ohio, and Nickel Plate. The plain material price is based on 2.00c, Chicago.

**Boston, Jan. 7.**—Construction work since Jan. 1 has been quiet with no awards. A few projects are expected to reach the award stage within ten days. Included is the Edison office building, this city.

**Philadelphia, Jan. 7.**—Eastern shape mills continue to maintain operations around 80 to 85 per cent but prices again are somewhat easier. Current market on plain material now is 1.80c to 1.95c, base, eastern mills, equivalent to 1.86c to 2.01c, base, delivered Philadelphia.

**Pittsburgh, Jan. 7.**—Structural fabricating shops are well engaged, particularly as compared with a year ago. Current operations, however, lack the support of new business. Recent awards involve few individual lots of more than 1000 tons. Inquiry is moderately active and prospective work favorable. Plain shape specifications are steady. The market continues 1.90c, Pittsburgh on most orders.

**Cleveland, Jan. 7.**—Structural shape specifications are remarkably well sustained. New jobs of size, however, are lacking although plenty of work is scheduled to break at an early date. Allard Smith, president of the chamber of commerce, estimates that the spring building program for northern Ohio involves total expenditures of $82,600,000. Shapes are 1.90c, base, Pittsburgh. A 350-ton job at Canton, O., was let. Halle Bros. Co. store there, 280 tons is still pending.

**Birmingham, Ala., Jan. 7.**—Operations of fabricating shops are unchanged. Unfilled tonnage is being worked off gradually. However, specifications are in sight which will provide business for some time.

## CONTRACTS PLACED

4200 tons, 35-story office building, Greenwich and Rector streets, New York, to Taylor-Fichter Steel Construction Co.

3800 tons, building, Southwestern Bell Telephone Co., San Antonio, Tex., to McClintic-Marshall Co.

2600 tons, Arch street viaduct, Philadelphia, to McClintic-Marshall Co.

1250 tons, building, Washington Athletic club, Seattle, to Wallace Bridge & Structural Steel Co.

1100 tons, Savoy-Plaza annex, New York, to McClintic-Marshall Co.

1100 tons, buildings for Standard Oil Co. of New Jersey, Bayway, N. J., to Belmont Iron Works.

850 tons, warehouse, Morris Wheeler & Co., Philadelphia, to Shoemaker Bridge Co.

850 tons, Presbyterian hospital, Philadelphia, to Bethlehem Fabricators Inc.

700 tons, apartment, Seventy-second street, New York, to Dreier Iron Works.

600 tons, bridge over Passaic river, Bergen county, N. J., to Paterson Bridge Works.

550 tons, Broening viaduct underpass, Baltimore, to Shoemaker Bridge Co.

550 tons, coal handling bridge, Northwestern Fuel Co., Milwaukee, to Milwaukee Bridge Co.

530 tons, warehouse, Dallas Brass & Copper Co., Chicago, to Hansell-Elcock Co.

500 tons, (including also plates and bars) Norfolk & Western railroad contract, to Jones & Laughlin Steel Corp.

500 tons, bridges, Pennsylvania railroad, New Brunswick, N. J., to American Bridge Co.

360 tons, telephone building, Chester, Pa., to McClintic-Marshall Co.

350 tons, building, Ohio Public Service Co., Canton, O., to Hiner Structural Steel Co.

300 tons, grain elevators, Tacoma, Wash., to Star Iron Works.

300 tons, New York state highway bridge, to American Bridge Co.

300 tons, bridges, Pennsylvania railroad, New Brunswick, N. J., to Shoemaker Bridge Co.

300 tons, building, W. J. Gamble Corp., Allentown, Pa., to McClintic-Marshall Co.

265 tons, three highway bridges for Erie and Niagara counties, New York state, to American Bridge Co.

240 tons, municipal garage, Oakland, Calif., to Pacific Coast Engineering Co.

225 tons, subway sections Nos. 4 and 5, Newark, N. J., to American Bridge Co.

200 tons, Pennsylvania railroad bridge, Sayville, N. Y., to American Bridge Co.

200 tons, store, Burnham-Kirby Co., Detroit, to Whitehead & Kales Co.

200 tons, foundry building for unstated interest, South Bend, Ind., to Rochester Bridge Co.

200 tons, governmental magazine buildings, Benecia, Calif., to Judson-Pacific Co.

200 tons, New York state highway bridge, to American Bridge Co.

165 tons, Ottawa river bridge, Lucas county, Ohio, to American Bridge Co.

150 tons, bridge, Bronx, N. Y., park commission, to Penn Bridge Co.

150 tons, highway bridge, Yonkers, N. Y., to Penn Bridge Co.

150 tons, engineering building additions, University of Detroit, Detroit, to Whitehead & Kales Co.

150 tons, Wayne county, Mich., airport hangar, to R. C. Mahon Co., through Gallagher-Flemming Co., general contractor.

100 tons, tanks and warehouse, Texas Co., Seattle, and cannery, Cordova, Alaska, to Isaacson Iron Works.

100 tons, state hospital, Medical Lake, Wash., to Isaacson Iron Works.

100 tons, store, for Kress, Main street, Riverside, Calif., to Minneapolis Steel & Machinery Co.

100 tons, miscellaneous work including building, Mid-West Forge Co., Cleveland, to National Iron & Wire Co.

## Awards Compared

| | Tons |
|---|---|
| Awards this week | 24,485 |
| Awards last week | 7,169 |
| Awards two weeks ago | 57,115 |
| Awards this week in 1929 | 31,265 |
| Average weekly awards, 1929 | 42,213 |
| Average weekly awards, 1930 | 15,827 |
| Average weekly awards, Dec. | 50,529 |
| Total awards to date, 1929 | 53,740 |
| Total awards to date, 1930 | 31,654 |

## CONTRACTS PENDING

12,000 tons, transmission and catenary towers, Pennsylvania railroad, New York to Trenton, N. J.; awards expected late this week.

3000 tons, Wabash avenue bridge, Chicago; general contract awarded to unstated interest.

2000 tons, bank, Sixth avenue and Thirty-fifth street, New York.

1600 tons, apartment, Forty-ninth street, New York.

1200 tons, warehouse, Philadelphia.

600 tons, transmission and catenary towers, Pennsylvania railroad, West Philadelphia, Pa., freight yards; award expected late this week.

525 tons, bridge, New York Central, Memphis, N. Y.

450 tons, building, Ohio Bell Telephone Co., Toledo, O.; bids in.

330 tons, New York state highway bridge.

300 tons, high school, Beaver Falls, Pa.; bids in.

290 tons, two power houses, Pacific Gas & Electric Co., Tiger Creek, Calif., bids being received.

280 tons, store, Halle Bros. Co., Canton, O.; bids in.

265 tons, three buildings in Hawaii for Libby, McNeil & Libby, San Francisco; bids being received.

250 tons, garage for Kahalui railway, Honolulu; bids being received.

245 tons, Yellowstone river bridge, Gardiner, Mont.; bids opened Jan. 10 by bureau public roads, Portland, Oreg.

234 tons, bridge, at Coffeen, Ill., for Nickel Plate railroad, Cleveland.

200 tons, two railroad bridges between Salem, Warren and Thomaston, Me.
150 tons, bridge on Lido island, Newport Beach, Calif. Bids Jan. 6.
Unstated tonnage, Rocky River, O., high school to cost $200,000; plans completed by Fulton & Taylor, architects.
Unstated tonnage, Lorain-Central bridge, Cleveland; damage claims settled; $300,000 worth of pier work now being advertised.
Unstated tonnage, Main street bridge, Cleveland; city's plans approved by Brig. Gen. Howard Deakyne, chief army engineer, Washington; bids to be asked soon.
Unstated tonnage, Glenville hospital, 701 Parkwood drive, Cleveland; plans completed by George S. Ryder Co., architect; structure to cost $500,000.
Unstated tonnage, Shaker Heights, O., senior high school, Onaway and Aldersyde roads; plans prepared by Hubbell & Benes, architects; to cost $1,150,000.

## Pails and Tubs Down

Washington, Jan. 7.—Production of pails and tubs for November fell off perceptibly from October, 1929, and was next to the lowest for the year, according to the department of commerce. A comparison of the totals for the ten months of 1929, compared with the same period, 1928, shows a decline. Monthly figures follow:

(In dozens)

| | PAILS, TUBS | | OTHER WARE | |
|---|---|---|---|---|
| 1928 | Production | Shipments | Production | Shipments |
| Nov. | 131,792 | 103,290 | 33,553 | 34,012 |
| Total, 11 mo. | 1,682,702 | 1,660,599 | 479,386 | 457,854 |
| Dec. | 112,923 | 102,802 | 36,042 | 23,567 |
| Total | 1,795,625 | 1,763,401 | 515,428 | 481,421 |
| 1929 | | | | |
| Jan. | 151,106 | 165,745 | 40,649 | 36,896 |
| Feb. | 151,019 | 170,813 | 60,471 | 43,329 |
| March | 211,252 | 211,516 | 50,055 | 49,549 |
| April | 165,155 | 171,722 | 55,778 | 55,632 |
| May | 176,622 | 150,501 | 43,870 | 38,597 |
| June | 98,857 | 104,762 | 37,479 | 35,334 |
| July | 105,454 | 109,841 | 42,384 | 44,117 |
| Aug. | 107,004 | 108,461 | 53,250 | 54,860 |
| Sept. | 113,698 | 120,297 | 46,594 | 52,970 |
| Oct. | 129,282 | 135,197 | 45,117 | 49,511 |
| Nov. | 102,400 | 90,684 | 32,951 | 30,123 |
| Total, 11 mo. | 1,511,849 | 1,539,539 | 508,098 | 490,918 |

## Enameled Ware Low

Washington, Jan. 7.—November shipments of enameled sheet-metal ware suffered a considerable drop from October and were the lowest in 1929, also being lower than November, 1928. However, for 11 months of 1929 a large increase is noted over the same period of 1928, according to department of commerce figures. Monthly comparisons follow:

In Dozens

| 1928 | Total | White | Gray | Colored |
|---|---|---|---|---|
| Nov. | 328,875 | 139,197 | 123,850 | 65,828 |
| Total, 11 mo. | 3,869,422 | 1,770,371 | 1,415,864 | 683,187 |
| Dec. | 324,445 | 132,422 | 136,170 | 55,853 |
| Total, 1928 | 4,191,761 | 1,900,275 | 1,552,034 | 739,452 |
| 1929 | | | | |
| Jan. | 427,871 | 199,589 | 138,480 | 89,802 |
| Feb. | 390,577 | 178,589 | 131,206 | 80,782 |
| March | 449,425 | 183,191 | 166,368 | 99,866 |
| April | 463,577 | 194,971 | 137,764 | 130,842 |
| May | 352,885 | 156,195 | 109,165 | 87,525 |
| June | 337,375 | 147,285 | 89,919 | 100,171 |
| July | 290,532 | 127,058 | 90,454 | 73,020 |
| Sept. | 338,169 | 143,505 | 101,127 | 93,537 |
| Oct. | 371,292 | 158,138 | 112,391 | 100,763 |
| Nov. | 305,714 | 115,117 | 100,144 | 90,453 |
| Total, 11 mo. | 4,112,579 | 1,757,607 | 1,295,776 | 1,059,196 |

# Concrete Bars

**Inquiries Mount—Awards Still Limited—1600-Ton Lot Placed at Cincinnati**

LARGER jobs are coming to the front in the concrete bar market. A 1600-ton lot was placed at Cincinnati and a 500-ton pulp mill in Washington. A telephone building at Dayton, O., will take 3000 tons and bridges in Arizona and Oregon require 900 and 838 tons, respectively. Prospects are bright at Pittsburgh and elsewhere but current buying is small. Prices hold.

REINFORCING BAR PRICES, PAGE 43

**Pittsburgh, Jan. 7.**—An encouraging volume of pending and prospective work is present in the concrete reinforcing bar market. Current awards are no lighter than expected at this season, although the bulk of tonnage is made up of small individual lots. Prospective work in the Pittsburgh district is large but bids will not be asked on most of it for a number of months. The government closes bids on Jan. 9 on 300 tons for an industrial reformatory at Chillicothe, O. The market continues 1.95c, Pittsburgh, for stock lengths and 2.20c for cut lengths.

**Boston, Jan. 7.**—Only about 200 tons in odd tonnages represented the week's concrete bar bookings. The Edison building, here, 100 tons, will be awarded this week.

**Buffalo, Jan. 7.**—Large inquiries for concrete bars are absent. Sales for the first week of 1930 were confined to lots to be shipped direct from stocks in the district. Sellers quote 2.215c, Buffalo, on lots suitable for shipment direct from mill.

**Chicago, Jan. 7.**—Difficulty in financing is holding back much projected reinforcing bar work in building. The outlook for highway construction work during the year is encouraging. Prices of both billet and rail steel reinforcing bars are irregular. Based on the value of permits, Chicago building construction during 1929 represented a loss of 36 per cent from that of the preceding year's total, but was a gain of 94 per cent over 1919, and 123 per cent over 1909, according to a local survey. The total for last month was a loss of 77 per cent compared with December, 1928.

**Cincinnati, Jan. 7.**—The order for 1600 tons of concrete bars from the Sterritt Building Co., here, went to Jones & Laughlin Steel Corp. The Ohio Bell Telephone Co. building at Dayton, O., will take 3000 tons.

### CONTRACTS PLACED

1600 tons for Sterritt Building Co., Cincinnati, to Jones & Laughlin Steel Corp.
600 tons, Mundelein college, Devon avenue and Sheridan road, Chicago, to Calumet Steel Co.; previously reported Dec. 26 issue as going to unstated fabricator.
500 tons, additional contract, pulp mill, Olympic Forest Products Co., Port Angeles, Wash., to Pacific Coast Steel Co.
400 tons, Lawson Memorial Y. M. C. A., Chicago, to Concrete Steel Co.
250 tons, road work, Iowa, to Laclede Steel Co., through Central Engineering Co.
150 tons, bank, Broad and Columbia streets, Philadelphia, to Concrete Steel Co.
150 tons, telephone buildings, Easton and Chester, Pa., to Concrete Steel Co.
125 tons, sewer, Philadelphia, to Taylor-Davis Inc.

### CONTRACTS PENDING

3000 tons, building, Ohio Bell Telephone Co., Dayton, O.
900 tons, Salt river bridge, Phoenix, Ariz.; bids Jan. 20.
838 tons, Rogue river bridge, Gold Beach, Oreg.; bids Jan. 16.
500 tons, building, Washington Athletic club, Seattle; general contract awarded.
300 tons, government industrial reformatory, Chillicothe, O., bids close Jan. 9.
137 tons, highway work in Imperial county, Sacramento, Calif.; bids Jan. 15.

## Awards Compared

| | Tons |
|---|---|
| Awards this week | 3,175 |
| Awards last week | 1,974 |
| Awards two weeks ago | 2,745 |
| Awards this week in 1929 | 8,631 |
| Average weekly awards, 1929 | 5,849 |
| Average weekly awards, 1930 | 2,575 |
| Average weekly awards, Dec. | 3,656 |
| Total awards to date, 1929 | 8,631 |
| Total awards to date, 1930 | 5,149 |

## Foundry Output Lower

Worcester, Mass., Jan. 7.—Eleven foundries comprising the Worcester Foundry council turned out 4,108,685 pounds of castings in November, a decrease of 347,961 pounds from October, 1929, but an increase of 126,802 pounds over November, 1928. Monthly comparisons follow:

| 1928 | Pounds |
|---|---|
| November | 3,981,883 |
| December | 4,175,119 |
| Total, 1928 | 42,276,248 |
| 1929 | |
| January | 3,841,380 |
| February | 4,356,460 |
| March | 5,029,613 |
| April | 4,916,263 |
| May | 5,231,926 |
| June | 4,199,102 |
| July | 4,192,693 |
| August | 4,869,912 |
| September | 3,946,064 |
| October | 4,456,646 |
| November | 4,108,685 |

# Rails, Cars

**Burlington Orders 500 Cars—Other Orders Light—40,000 Up—96,910 Tons Rails Divided**

WHILE car buying since Jan. 1 has been light, 1930 starts auspiciously with 20,000 actively pending and a like number contemplated. Burlington bought 500 and distributed 67,050 tons of rails three ways. Early action is expected on 10,625 freight cars, 130 locomotives and 55 tenders for Chesapeake & Ohio and allied roads. Fastenings orders heavy; more approach placement.

RAILROAD TRACK PRICES, PAGE 44

**New York, Jan. 7.**—With close to 20,000 freight cars actively pending and with almost that number under contemplation, 1930 starts off in a most encouraging manner to car builders. Actual buying since the first of the year has been restricted, although bids have gone in on two or three large lists, likely to receive early action.

Returns for the year just ended indicate the placing of 106,105 freight cars. December total was 9710 as compared with 6361 for November. A comparative table follows:

| | 1929 | 1928 | 1927 | 1926 |
|---|---|---|---|---|
| Jan. | 13,196 | 4,160 | 14,710 | 8,830 |
| Feb. | 15,944 | 10,220 | 5,960 | 12,895 |
| March | 12,023 | 2,958 | 4,955 | 8,895 |
| April | 8,205 | 6,043 | 3,675 | 4,615 |
| May | 7,562 | 2,531 | 5,425 | 4,448 |
| June | 5,886 | 2,422 | 7,440 | 4,285 |
| July | 341 | 582 | 2,295 | 1,265 |
| Aug. | 2,854 | 677 | 1,181 | 152 |
| Sept. | 4,517 | 1,378 | 682 | 3,335 |
| Oct. | 19,506 | 2,853 | 886 | 2,840 |
| Nov. | 6,361 | 6,140 | 1,189 | 3,925 |
| Dec. | 9,110 | 4,799 | 14,897 | 8,990 |
| Total (12 mos.) | 106,105 | 44,763 | 63,295 | 64,475 |

Although taking no action, New York Central opened bids on finished steel for first quarter. Requirements include black, galvanized and blue annealed sheets, seamless steel tubing, axles for cars and tenders, wire nails, staples, bars, shapes, plates and conduit, in addition to various track accessories. New York, New Haven & Hartford is still figuring on 5000 to 10,000 kegs of spikes, and the Erie on spikes and tie plates.

**Pittsburgh, Jan. 7.**—Fastening requirements of the Baltimore & Ohio and Erie railroads remain pending. No additional inquiries are noted although practically all roads have completed their annual purchases. Occasional orders are received from smaller carriers who buy at varying periods during the year. Producers of fastenings have increased their operations and shipments, largely due to the fact some tonnage was held over until Jan. 1. Light and relaying rails continue quiet. Railroad spikes hold at 2.80c, Pittsburgh, with light rails continuing $36.

**Cleveland, Jan. 7.**—Nickel Plate is distributing orders for 29 860 tons of rails. Car, locomotive and tender orders too are expected at an early date from the Van Sweringen roads. Erie and Nickel Plate car lists are expected before Jan. 31.

**Chicago, Jan. 7.**—Track accessory tonnage grows steadily in volume. Chicago district mills received orders for about 14,000 to 15,000 tons during the week, and it is estimated that inquiries for coverage in two weeks total 25,000 to 30,000 tons. Miscellaneous lots of light rails were closed. Rail mill operations in the district are slightly higher at a few points above 85 per cent with one operating at close to 90 per cent. Burlington's total rail purchases were 67,050 tons. Burlington may buy more than 2000 freight cars in addition to 500 automobile cars awarded Pressed Steel Car Co. It originally inquired for 2700 cars but 700 flats and the gondola cars are to be built in its own shops. Car shop specifications are growing in volume. Orders for finished steel are being received for the Rock Island, Missouri Pacific, Santa Fe and St. Paul car orders. Southern Pacific is expected to place a large order for cars within a short time, and Chicago, Milwaukee, St. Paul & Pacific may be in the market soon for 15 to 20 locomotives.

**Toronto, Ont., Jan. 7.**—Between $500,000 and $600,000 is represented in the purchase of 20 baggage cars and 15 express refrigerator cars by Canadian National Railways from National Steel Car Co. This order, with unfilled orders, will keep the car plant running at capacity several months.

## CAR ORDERS PLACED

Canadian National, 20 baggage and 15 express refrigerator cars, to National Steel Car Co.

Chicago, Burlington & Quincy, 500 automobile cars, to Pressed Steel Car Co., and 100 flats, to own shops.

Missouri Pacific, four dining and parlor cars, to American Car & Foundry Co., and five club cars, to Pullman Car & Mfg. Corp.

Reading, one rail motor car, to J. G. Brill Co.

Southern, 23 baggage-mail cars to Bethlehem Steel Co.

### LOCOMOTIVE ORDERS PLACED

Bessemer & Lake Erie, nine large freight engines, to Baldwin Locomotive Works, costing approximately $1,082,000.

### RAIL ORDERS PLACED

Chicago, Burlington & Quincy, 56,500 tons: 26,100 tons to Illinois Steel Co.; 13,000 tons to Inland Steel Co.; and 17,400 tons to Colorado Fuel & Iron Co. Reference to this contract was made on page 63 of IRON TRADE REVIEW of Jan. 2.

29 860 tons, Nickel Plate; orders being distributed.

10,550 tons, Colorado & Southern and Fort Worth & Denver City, (Burlington subsidiary lines) to Colorado Fuel & Iron Co.

## CAR ORDERS PENDING

Chesapeake & Ohio and allied roads, inquiries increased to include 11,375 freight cars as follows: 3750 gondolas, 3500 box, 2000 single sheathed automobile, 1500 70-ton hoppers, 250 automobile-furniture, 250 flat bottom gondolas, 100 flats and 25 cabooses.

International Railways of Central America, 15 miscellaneous coaches.

Seaboard Air Line, 1000 single sheathed box cars; bids opened Jan. 12.

Southern Pacific, 20 miscellaneous coaches, comprising 10 baggage, five dining and four lounge cars.

### LOCOMOTIVE ORDERS PENDING

International Railways of Central America, three locomotives.

# Operating Rates

**Operations Gain; Some Districts Lag in Recovery**

**Buffalo**—Steelworks' operations increased sharply this week, with 25 of 37 open-hearths active. This is a gain of nearly 50 per cent over the average December operation. Unfilled orders are said to indicate continued operations at, or possibly in excess of, this rate throughout January.

**Pittsburgh** — Ingot production is higher at 60 per cent. Operations of practically all finishing departments are higher, with sheet output at 60 to 70 and tin plate at 75 to 80. Strip schedules have been raised to 40, with pipe mills continuing at 40.

**Chicago**—Steelworks' operations are making slow but gradual gain over holiday recession. Operating rate is 55 to 60 per cent, a gain of ten points over last week. While only twenty of thirty-six steelworks blast furnaces are active, finishing mill operations are being stepped up. The leading interest is blowing 11 of 27 furnaces.

**Youngstown, O.**—Continued expansion of mill operations, excepting tubular goods, is reported this week. Operations for the week will be about 65 per cent, compared with 55 last week, with all gains made by independents. Tube mill production will not reach 40, and bar mill operations will average 60 for independents and the Corporation. Of the 120 independent sheet mills, 90 are scheduled for full turn operations against 71 last week and a low of 40 three weeks ago. Tin plate production will be resumed in full next week.

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Thirty-one radio stations are participating in the second universal safety series presented by the National Broadcasting Co., in co-operation with the National Safety council. These programs are presented each Tuesday evening at 7:15 p. m. eastern standard time. The programs, given weekly at the same hour during the 11-week period, feature safety talks by experts alternated with dramatizations touching on important safety problems of the day.

# Strip

**Expanding Specifications Add to Mill Backlogs—Automotive Comeback Remains Slow**

PRODUCERS of strip steel find January bringing much better tonnage than December but it has not yet appeared clearly whether buying is to replenish depleted stocks or for present needs. Automotive buying is limited to a few builders but is increasing. Production has been stepped up moderately. Most contracts for first quarter delivery were completed at current prices.

STRIP PRICES, PAGE 44

**Pittsburgh, Jan. 7.**—Strip steel demand shows moderate improvement compared with December. Some tonnage had been held for shipment after the first of the year and this has served to boost operations. New business does not show the same rate of increase although a moderate gain is noted in aggregate tonnage. The upturn in automotive buying remains slow, with most expansion confined to a few interests. Operations are higher this week at 40 per cent. First quarter contracting practically is completed, with prices fairly steady. Lower quotations are heard on desirable tonnages but the market generally remains 1.90c and 2.00c for hot strip and 2.75c for cold-rolled strip.

**New York, Jan. 7.**—Buying of strip steel is more active with the electrical industry showing the chief interest. Prices are firm at 2.75c, Pittsburgh, for cold-rolled and 1.90c to 2.00c for hot-rolled, depending on the width.

**Philadelphia, Jan. 7.**—Strip specifications are improved though prices are unchanged at 1.80c to 1.90c and 1.90c to 2.00c, base, Pittsburgh, for hot strip and at 2.65c to 2.75c, base, Pittsburgh, for cold.

**Cleveland, Jan. 7.**—The trend in strip steel is decidely upward. Automotive tonnage has increased greatly since Jan. 1. Consumers' stocks were allowed to dwindle and producers are waiting to see if recent orders are merely to replenish those stocks. While 1.80c and 1.85c, base, Pittsburgh, have appeared on wide strip, such low figures have applied on large tonnages of one size; the usual figure is 1.90c. On narrow strip recent sales have been made at 1.90c and 1.95c but the regular market is maintained at 2.00c. Cold is 2.75c, although 2.65c has applied recently on some large lots.

**Chicago, Jan. 7.**—Some automotive releases have increased hot-rolled strip mill specifications and operations. The position of mills has improved from a week ago. Quotations for hot-rolled strip are 2.00c to 2.10c, Chicago, according to widths. Cold-rolled strip is unchanged on the basis of 2.75c, Pittsburgh-Cleveland.

## Adopts 8-Hour Day

Toronto, Ont., Jan. 7.—The Steel Co. of Canada, Hamilton, Ont., abolished the 12-hour shift Jan. 1. Under the new schedule workmen will be on three 8-hour shifts and will be placed on a higher hourly rate. The additional cost to the company will be $300,000 a year.

## Research Body Is Ready

Toronto, Ont., Jan. 7.—Ontario Research Foundation has announced that organization of the Ontario Metal Industries Research association has been completed. R. W. Gilford, Massey-Harris Co., is chairman, and J. J. Ashworth, Canadian General Electric Co., honorary treasurer. The executive includes many men of prominence in the metalworking industry.

This places within reach of every manufacturer of Ontario complete laboratory facilities, at a nominal figure. O. W. Ellis, M.Sc., well-known metallurgical engineer, is in active charge of the work.

# Cold Finished Steel

**Specifications Increased from December Rate—Automotive Rate Better**

COLD FINISHED PRICES, PAGE 44

**Pittsburgh, Jan. 7.**—Automotive releases of cold-finished steel bars and shafting still furnished only a limited tonnage. Some improvement is shown compared with the December rate. Requirements of other industries are close to normal. Practically all contracts have been signed for the current quarter, with 2.20c generally firm.

# Wire

**Production Increased as Orders Are Released—Wire Prices Firm as Nails Are Shaded**

WESTERN wire producers find recent buying has given comfortable backlogs, while eastern mills are not quite so well situated. The South is buying well, but weather in the West has delayed placing of orders. Attractive nail tonnages continue to command concessions. Wire prices are firm. Jobbers are taking a little tonnage, but are holding back to a considerable degree.

WIRE PRICES, PAGE 44

**Chicago, Jan. 7.**—Steady contracting in wire products the past several weeks has placed important tonnages on mill books but specifications are not sufficient to increase operations above 40 per cent. Retail and jobber distribution of common wire products have been adversely affected by heavy snows in West and Northwest, but in the South buying has been fairly active. First quarter contracts are being made on the basis of 2.45c, Chicago or western mills, for plain wire, and $2.45 to $2.55 for wire nails.

**Worcester, Mass., Jan. 7.**—Wire shipments show improvement over December and a good month is expected. Advanced delivery dates are improving the situation considerably. Production is now on a 60 per cent basis, or 15 to 20 per cent lower than October. Plain bright wire to dealers is quoted at 2.55c to 2.65c, base, Worcester.

**Pittsburgh, Jan. 7.**—Business in wire products is only moderately active, with new buying continuing light. Releases of some material held up over the inventory period serve to improve operations and shipments over the slow rate of the past several weeks. With the exception of one or two automotive interests which have materially increased their requirements, aggregate tonnage from this industry still is light. Jobbing products are slow. The market on nails is unsteady although producers continue to quote $2.40 to $2.50. Plain wire generally is held at 2.40c.

**Cleveland, Jan. 7.**—Wire business is slowly taking form but nails still lag. Jobber orders for mixed carloads are becoming slightly more numerous. While the usual market on nails is $2.40, some orders involving up to 200 tons have uncovered $2.30 and $2.35. Plain wire, however, is firm at 2.40c.

## Hamilton Mill at Record

Toronto, Ont., Jan. 7.—Output in 1929 of the Steel Co. of Canada Ltd., Hamilton, Ont., was the largest on record, and profits also will be shown at a new high level, since the best war years. This is in spite of a slight decrease in business late in 1929.

# Nonferrous Metals

**Some Active Buying of Copper and Tin Is Done—Zinc Prices Drop as Weak December Statistics Are Published—Lead Is Firm**

## Prices of the Week, Cents a Pound

| | Copper: Electro delivered | Copper: Lake delivered | Copper: Casting refinery | Straits Tin: New York Spot | Straits Tin: New York Futures | Lead: New York | Lead: East St. Louis | Zinc: St. Louis | 98-99% Aluminum | Spot Antimony | Ingot Nickel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 1—Holiday | | | | | | | | | | | |
| Jan. 2 | 18.00 | 18.10 | 17.00 | 39.75 | 40.50 | 6.25 | 6.10 | 5.45 | 23.90 | 8.50 | 35.00 |
| Jan. 3 | 18.00 | 18.10 | 17.00 | 38.87½ | 39.62½ | 6.25 | 6.10 | 5.45 | 23.90 | 8.50 | 35.00 |
| Jan. 6 | 18.00 | 18.10 | 17.00 | 38.75 | 39.50 | 6.25 | 6.10 | 5.40 | 23.90 | 8.50 | 35.00 |
| Jan. 7 | 18.00 | 18.10 | 17.00 | 39.55 | 40.30 | 6.25 | 6.10 | 5.30 | 23.90 | 8.37½ | 35.00 |

NEW YORK, Jan. 7.—Buyers of nonferrous metals in general continue out of the market, but in the past week there have been several outstanding exceptions. Large electrical business has been done in copper with a few sellers for shipment over the first quarter. Tin demand was more active last Friday than in a long time for all positions from spot to June. Sales again were active on Tuesday.

Brass and copper products still are in a quiet market. A few good orders have been placed for condenser tubing and others are pending for this product and brass pipe. Prices as a whole are unchanged, though some low figures have been reported at times to attract orders.

**Copper**—Price remains firm at 18.00c, Connecticut, with no signs of weakness. Export business has been of moderate size nearly every day, and has been much more regular than domestic. Producers believe that considerable domestic business will be placed shortly even though actual consumption may remain light through this month.

**Zinc**—Prime western price dropped off again on Monday and Tuesday after having been fairly steady for about ten days. Buying in the past week has been light. Easiness today followed publication of weak statistics for December. Slab zinc stocks at the end of December totaled 77,262 tons, the largest since September, 1921. Total shipments last month were the lightest since July, 1922. Daily output declined 20 tons from the November rate.

**Tin**—With the exception of one day, buying has been light. This lack of business together with continued large supplies, has pushed the market back to the unusually low level of late last year. Meanwhile, differentials on futures have increased so that they now range upward about ¼-cent a month. World visible supply increased 2969 tons last month to 28,140 tons, the highest total in many years. In addition to the visible, the carry-over at the Straits increased slightly to the unusually large sum of 4425 tons. Straits shipments last month were a trifle lighter than had been expected, at 8950 tons, making the total for the year 102,019 tons, a new record. Domestic deliveries last month were light at 5740 tons, while the total for the year was 89,110 tons, an increase of 10,245 over those of 1928. Consumption established a new record, but because of rumors that some shipments represent metal sent into hidden stocks, it is difficult to tell whether the shipments are an accurate reflection of consumption.

**Lead**—Buying continues steady, and consumers now are asking for February shipment. Prices show firmness.

**Aluminum**—New business continues light, but the outlook for aluminum business this year is bright and prices are firm.—*Daily Metal Trade.*

## Mill Products

**Base price cents per pound f.o.b. mill, except where otherwise specified**

| | |
|---|---|
| **SHEETS** | |
| Yellow brass (high) | 23.25 |
| Copper, hot rolled | 27.75 |
| Lead, full sheets (cut ½c more) | 10.00 |
| Zinc sheet (100-pound base) | $10.50 |
| Zinc strip (100-pound base) | $9.50 |
| Aluminum, flat sheets, up to 10 gage, 3 to 72 inches wide | 31.30 |
| **SEAMLESS TUBE** | |
| Yellow brass (high) | 28.25 |
| Copper | 29.25 |
| **RODS** | |
| Yellow brass (high, full turnings) | 21.25 |
| Naval brass | 24.00 |
| **WIRE** | |
| Copper | 19.87½ |
| Yellow brass (high) | 23.75 |

## Old Metals

**Dealers' buying prices, cents per pound**

| | |
|---|---|
| **HEAVY RED BRASS** | |
| New York | 11.00 to 11.50 |
| Chicago | 11.00 to 11.25 |
| Cleveland | 11.00 to 11.50 |
| St. Louis | 10.00 to 10.25 |
| **HEAVY YELLOW BRASS** | |
| Cleveland | 7.50 |
| **HEAVY COPPER AND WIRE** | |
| New York | 14.00 to 14.25 |
| Boston | 13.75 to 14.25 |
| Chicago | 12.25 to 12.75 |
| Cleveland | 13.50 to 14.00 |
| St. Louis | 10.00 to 10.50 |
| **RED BRASS BORINGS** | |
| New York | 10.25 to 10.75 |
| **YELLOW BRASS TUBING** | |
| Cleveland | 7.00 to 7.50 |
| **LIGHT COPPER** | |
| New York | 12.00 to 12.25 |
| Chicago | 11.25 to 11.75 |
| Cleveland | 12.00 to 12.50 |
| St. Louis | 10.00 to 10.50 |
| **LIGHT BRASS** | |
| Boston | 6.50 to 6.75 |
| Chicago | 6.00 to 6.50 |
| Cleveland | 5.50 to 6.00 |
| St. Louis | 5.50 to 6.00 |
| **ZINC** | |
| New York | 2.75 to 3.00 |
| Cleveland | 2.25 to 2.50 |
| St. Louis | 2.75 |
| **ALUMINUM** | |
| Clippings, Cleveland | 13.00 to 14.00 |
| Borings, Cleveland | 7.50 to 8.50 |
| Cast, Cleveland | 10.00 to 11.00 |
| Cast, Boston | 10.50 to 11.00 |
| Cast, St. Louis | 10.50 to 11.00 |

## Secondary Metals

| | |
|---|---|
| Remelt aluminum No. 12 | 16.25 to 16.75 |
| Brass ingot, 85-5-5-5 | 15.50 to 15.75 |

# Coke By-Products

**Shipments Slightly Better, But Real Gains Await Late January**

New York, Jan. 7.—Shipments against contracts for light oil distillates show a slight improvement, but seasonal activity is not expected until later in the month. Prices are firm and unchanged. Demand for benzol holds well and contracting with several distributors has been slightly heavier than last year.

Phenol holds to the recent rate of buying, although demand is nearer supply. Prices are firm, with some midwest material reported in this market slightly under quoted figures.

Naphthalene is slightly more active, some shipments having started against contracts, which have been about normal. Prices are firm and unchanged. Sulphate of ammonia prices are soft, with buying in the spot market light, largely being confined to export.

## Coke By-Products

**Per Gallon at Producers' Plant in Tank Lots**

| | Spot |
|---|---|
| Pure benzol | $0.23 |
| 90 per cent benzol | 0.23 |
| Toluol | 0.40 |
| Solvent naphtha | 0.30 |
| Commercial xylol | 0.30 |

**Per Pound at Producers' Plants in 250-Pound Drums**

| | |
|---|---|
| Phenol | 0.17 to 0.18 |

**Per Pound at Producers' Plants**

| | |
|---|---|
| Naphthalene flakes | 0.04½ to 0.05½ |
| Naphthalene balls | 0.05½ to 0.06½ |

**Per 100 Pounds Delivered**

| | |
|---|---|
| Sulphate of ammonia | $2.10 to $2.20 |

## Quicksilver Now $124

New York, Jan. 7.—Quicksilver is active and firm at $124 a flask. Recently it was $124 to $124.50.

# Warehouse

**Blue Annealed Gage Extras Raised 10 Cents at New York—Most Sections Quiet—Some Note Better Buying to Replace Stocks**

IN SOME sections steel consumers' inventories revealed shortages which quickly had to be replenished. This sent much business to jobbers during the year's initial week. New York jobbers increased gage extras on No. 14 and 16 blue annealed sheets. Sales at Chicago show a moderate increase, but at Detroit, Cincinnati and elsewhere no real upturn is noted.

**Boston**—Orders are few but signs of improvement are present because of a bettered credit situation. Business in the last quarter of 1929 was a little slower than usual. Throughout 1929 collections were good.

**New York**—Leading warehouse jobbers announce an increase of 10 cents in the gage extras on 14 and 16-gage blue annealed sheets. These extras now are 20 cents and 30 cents, respectively. The change conforms to recent mill extras. Cold-finished materials are sluggish. Demand generally is moderately active.

**Philadelphia**—Jobbers' recent sales were better than expected. The December total exceeded November's and January so far is about equal to November average. Prices are firm and unchanged.

**Buffalo**—Volume is good for early January, compared with the small orders of late December. Inventories revealed shortages and partial coverage through warehouses has been rather general.

**Detroit**—While a limited tonnage is moving from warehouses to automotive parts makers, demand in general is quiet. Prices are unchanged.

**Chicago**—Warehouse sales of bar mill products, sheets, plates and several other lines show moderate increases. Wire nail prices are reported to be more stabilized.

**Cincinnati**—The new year has failed so far to bring any decided upturn. Tonnage is slightly below seasonal average. Prices are unchanged.

**St. Louis**—Business has failed to pick up since the holidays. Consumers are occupied with inventories, and are not disposed to buy heavily. Tubular goods move fairly well. All other items are slow.

**Cleveland**—Small tonnages are moving. Immediately after Jan. 1 a brief spurt in buying was noted, and at the moment the market is dull. Jobbers look for a pickup in demand the latter part of the month. Prices are unchanged.

## Warehouse Quotations in Cents Per Pound at Leading Market Centers

### STEEL BARS

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.265c |
| Buffalo | 3.30c |
| Chattanooga | 3.25c |
| Chicago | 3.00c |
| Cincinnati | 3.30c |
| Cleveland | 3.00c |
| Detroit | 3.00c |
| Houston | 3.00c |
| Los Angeles | 3.30c |
| New York†††‡‡ | 3.25c |
| Philadelphia* | 2.80c |
| Pittsburgh | 2.90c |
| Portland | 3.00c |
| San Francisco | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.15c |
| St. Paul | 3.25c |
| Tulsa | 3.75c to 4.04c |

### IRON BARS

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.265c |
| Buffalo | 3.30c |
| Chattanooga | 3.25c |
| Chicago | 3.00c |
| Cincinnati | 3.30c |
| Detroit | 3.00c |
| New York †† | 3.25c |
| Philadelphia* | 2.80c |
| St. Louis | 3.15c |
| Tulsa | 3.75c to 4.04c |

### REINFORCING BARS

| | |
|---|---|
| Baltimore | 3.31c |
| Boston | 3.265c to 3.50c |
| Buffalo | 2.95c |
| Chattanooga | 3.25c |
| Cincinnati | 3.15c |
| Cleveland | 2.25c to 2.44c |
| Detroit | 2.30c to 3.00c |
| Houston | 3.00c |
| Los Angeles cl | 2.40c |
| Los Angeles lcl | 2.70c |
| New York | 2.90c to 3.30c |
| Philadelphia | 2.77c to 2.92c |
| Pittsburgh | 2.90c to 3.175c |
| San Francisco cl. | 2.30c |
| San Francisco lcl. | 2.60c |
| Seattle | 3.00c |
| St. Louis | 3.15c |
| Tulsa | 3.75c to 4.00c |
| Youngstown | 2.30c to 2.60c |

### STRUCTURAL SHAPES

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.365c |
| Buffalo | 3.40c |
| Chattanooga | 3.35c |
| Chicago | 3.10c |
| Cincinnati | 3.40c |
| Cleveland | 3.00c |
| Detroit | 3.10c |
| Houston | 3.25c |
| Los Angeles | 3.30c |
| New York †††‡‡ | 3.30c |
| Philadelphia* | 2.70c |
| Pittsburgh | 3.00c |
| Portland | 3.00c |
| San Francisco | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.25c |
| St. Paul | 3.35c |
| Tulsa | 3.75c to 4.14c |

### PLATES

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.365c |
| Buffalo | 3.40c |
| Chattanooga | 3.35c |
| Chicago | 3.10c |
| Cincinnati | 3.40c |
| Cleveland, ¼ in. and thicker | 3.00c |
| Cleve., 3/16-in. | 3.20c |
| Detroit | 3.10c |
| Detroit, 3/16-in. | 3.10c |
| Houston | 3.00c |
| Los Angeles | 3.30c |
| New York‡‡ | 3.30c |
| Philadelphia* | 2.70c |
| Pittsburgh | 3.00c |
| Portland | 3.00c |
| San Francisco | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.25c |
| St. Paul | 3.35c |
| Tulsa | 2.75c to 4.14c |

### NO. 10 BLUE ANNEALED

| | |
|---|---|
| Baltimore | 3.60c |
| Boston 3/16in. | 3.915c |
| Buffalo | 3.50c |
| Chattanooga | 3.75c |
| Chicago | 3.35c |
| Cincinnati | 3.45c |
| Cleveland | 3.25c |
| Detroit | 3.35c |
| Houston | 3.90c |
| Los Angeles | 4.00c |
| New York‡‡ | 3.50c to 3.90c |
| Portland | 3.75c |
| Philadelphia*† | 3.25c |
| Pittsburgh** | 3.35c to 3.45c |
| San Francisco | 3.90c |
| Seattle | 4.00c |
| St. Louis | 3.45c |
| St. Paul | 3.75c |
| Tulsa | 4.20c to 4.34c |

### NO. 24 BLACK SHEETS

| | |
|---|---|
| Baltimore*† | 3.75c |
| Boston | 4.85c |
| Buffalo | 4.20c |
| Chicago | 4.05c |
| Cincinnati | 4.05c |
| Cleveland*** | 3.75c to 3.90c |
| Detroit | 3.95c |
| Los Angeles | 4.90c |
| New York | 3.90c |
| Philadelphia*† | 3.90c |
| Pittsburgh** | 3.85c |
| Portland | 4.90c |
| San Francisco | 4.90c |
| Seattle | 5.00c |
| St. Louis | 4.25c |
| St. Paul | 3.89c |
| Tulsa | 4.34c |

### NO. 24 GALVANIZED SHEETS

| | |
|---|---|
| Baltimore*† | 4.50c |
| Boston | 5.60c |
| Buffalo | 4.70c to 4.85c |
| Chicago | 4.90c |
| Cincinnati | 4.90c |
| Cleveland*** | 4.60c to 4.75c |
| Detroit | 4.75c |
| Houston | 5.40c |
| Los Angeles | 5.30c |
| New York | 4.25c to 4.50c |
| Philadelphia*† | 4.65c |
| Pittsburgh** | 4.85c to 4.95c |
| Portland | 5.50c |
| San Francisco | 5.30c |
| Seattle | 5.50c |
| St. Louis | 5.10c |
| St. Paul | 4.68c |
| Tulsa | 5.10c to 5.35c |

### BANDS

| | |
|---|---|
| Baltimore | 4.00c |
| Boston | 4.015c to 5.00c |
| Buffalo | 3.65c |
| Chattanooga | 3.45c |
| Chicago | 3.20c |
| Cincinnati | 3.50c |
| Cleveland | 3.25c to 3.65c |
| Detroit 3/16-in. and lighter | 3.30c |
| Houston | 3.65c |
| Los Angeles | 4.15c |
| New York‡‡ | 3.75c |
| Philadelphia* | 3.30c |
| Pittsburgh | 3.25c |
| Portland | 4.00c |
| San Francisco | 3.75c |
| Seattle | 4.00c |
| St. Paul | 3.50c |
| Tulsa | 4.50c to 4.69c |

### HOOPS

| | |
|---|---|
| Baltimore | 4.00c |
| Boston | 5.50c to 6.00c |
| Buffalo | 4.05c |
| Chicago | 3.75c |
| Cincinnati | 4.05c |
| Cleveland | 3.25c to 3.65c |
| Detroit, No. 14 and lighter | 3.80c |
| New York‡‡ | 4.25c |
| Philadelphia* | 3.55c |
| Pittsburgh | 4.25c |
| Seattle | 5.00c |
| St. Paul | 4.00c |

### COLD FINISHED STEEL

| | Rounds, Flats, hexagons | squares |
|---|---|---|
| Baltimore (c) | 3.50c(a) | 4.00c |
| Boston | 3.55c | 4.05c |
| Buffalo | 3.95c | 4.45c |
| Chattanooga* | 3.85c | 4.35c(d) |
| Chicago | 3.60c | 4.10c |
| Cincinnati | 3.85c | 4.35c |
| Cleveland | 3.65c | 4.15c |
| Detroit | 3.85c | 4.35c |
| Los Angeles (a) | 4.50c | ..... |
| New York | 3.50c | 4.00c |
| Philadelphia* | 3.50c | 4.00c |
| Pittsburgh | 3.70c | 4.20c |
| Portland (a) | 4.50c | ..... |
| San Fran. (a) | 4.25c | ..... |
| Seattle (a) | 5.00c | ..... |
| St. Paul (a) | 3.85c | ..... |
| Tulsa | 4.64c | 5.14c |

(a) Rounds only; (d) Squares only.

### COLD ROLLED STRIP

| | |
|---|---|
| Boston, 0.100-inch, 500 pounds lots | 5.30c |
| Buffalo | 5.85c |
| Chicago (b) | 6.10c |
| Cincinnati | 7.15c |
| Cleveland (b) | 5.95c |
| Detroit | 5.80c |
| New York | 5.15c |
| Philadelphia (c) | 5.15c |

(b) Net base, straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras.

### SWEDISH IRON AND STEEL

**New York duty paid**

| | |
|---|---|
| Hollow drill steel | 13.00c |
| Iron bars, round | 6.10c |
| Iron bars, flats and squares | 6.50c |

*Plus quantity differentials. ‡‡Minus quantity differentials. ††Domestic bars. **Less than 25 sheets. *†50 or more bundles. ***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

# Pacific Coast

**Year's Record Shows Gain Over 1928—Current Business Generally Good**

STATISTICS of steel sales in the Pacific Northwest show a decided gain over the preceding year and may be a record for the district. Current buying of pig iron is slack as melters have fair stocks. Prices are steady and unchanged. Development of the Olympic peninsula is bringing some activity in iron and steel. Building promises to continue at a good rate.

**Seattle, Dec. 31.**—Tonnages of steel, in lots of 100 tons or more, placed in the Pacific Northwest in 1929 show a marked increase over the two previous years and probably establish a record. Totals for 1929 are 151,557 tons, compared with 132,000 tons in 1928 and 125,000 tons in 1927. Figures for first half of 1929 were 59,919 tons while the second half registered a large gain with 91,638 tons. Compared with 1928 tonnages of cast iron pipe and reinforcing, 1929 is about on a par. However, sales of structurals increased from 45,000 tons to 53,608 in 1929 and plates increased from 25,000 tons in 1928 to 46,691 tons.

In addition to the above tonnages of reinforcing, shapes, plates and cast iron pipe, local plants booked about 7000 tons in pipe bands and tie plates in 1929.

### Pig Iron and Coke

There is little buying at this time. Some consumers have covered requirements for first half but others are well stocked. Foundry activity is low, not a few plants being idle and none operating at full capacity. Prices of pig iron and coke are unchanged.

## Coast Pig Iron Prices

| | |
|---|---|
| Utah basic | $25.00 to 26.00 |
| Utah foundry | 25.00 to 26.00 |
| *German | 24.25 |
| *Indian | 25.00 to 26.00 |

*C.i.f. duty paid.

### Bars, Plates and Shapes

Mill prices of finished steel are steady at 2.35c for merchant bars and shapes and 2.30c for reinforcing bars and plates. The Seattle plant of the Pacific Coast Steel Co. resumed operations this week after a brief shutdown for overhauling. Recent awards of reinforcing bars have been in small tonnages. The year's totals average slightly in excess of 1928. Pacific Coast Steel Co. has booked an additional 500 tons in connection with the new plant of the Olympic Forest Products Corp. at Port Angeles. Immediate award of 500 tons for the Washington Athletic club building, Seattle, is expected. Olympia Forest Products Corp. has the contract for constructing 5 1/3 miles of wood and concrete water pipe from the Elwha river to Port Angeles. Northwest Contract Co. has the contract for a highway bridge over the Rogue river, Oregon, involving 225 tons of reinforcing steel.

No important tonnages of plates have definitely developed although several projects are to be up for consideration early in 1930. State of Washington has purchased from the United States Steel Corp. 200 tons of sheet steel for the state's 1931 automobile license plates.

Wallace Bridge & Structural Steel Co. this week booked 1250 tons of shapes for the Washington Athletic Club building, Seattle. The Star Iron Works is reported to have the contract for fabricating 300 tons of shapes for the new Port of Tacoma grain elevators. Isaacson Iron Works has taken 200 tons for the Medical Lake hospital, tanks for the Texas Co., Seattle, and a cannery building at Cordova, Alaska. Poole & McGonigle have received a subcontract from the United States Steel Corp. to furnish four 144-foot steel spans for the St. Johns bridge, Portland. United States bureau of roads will open bids in Portland, Jan. 10, for a bridge in Park county, Mont., requiring 245 tons of shapes and 40 tons of reinforcing. Northern Construction Co. has the contract for the Canadian Northern railway pier extension superstructure at Vancouver, B. C., calling for 400 tons of structurals.

## Steel & Tubes Wins Suit

Youngstown, O., Jan. 7—.The United States district court at Brooklyn, N. Y., has upheld the Johnson electric pipe welding patent owned by Steel & Tubes Inc., a subsidiary of the Republic Iron & Steel Co. Steel & Tubes brought suit against the Greenpoint Metallic Bed Co., Brooklyn, N. Y., alleging infringement.

## Cut Freight to Coast

Chicago, Jan. 7.—New joint through freight rates from Chicago, Chicago Heights, and other Chicago terminal points to Pacific coast ports will become effective Feb. 1 on the Chicago & Eastern Illinois railroad, according to J. B. Ford, president. The rates will apply on the Chicago & Eastern Illinois and its southern connections to Mobile or New Orleans, and the Gulf Pacific line, Luckenback Gulf Steamship Co. Inc., and the Transmarine Corp., operating by way of the Panama canal.

These rates will apply on iron and steel articles, tin plates, canned goods, soap, lye and other commodities, and are substantially less than all-rail routes to the same destinations, amounting to decreases of 30 cents per 100 pounds for some commodities.

## Shape Shipments Off

Washington, Jan. 7.—Shipments of structural shapes in November fell off perceptibly from October to about the same level as November, 1928, but totals for the 11 months show a large gain over the same period of 1928. The following monthly comparisons are according to the department of commerce:

| | New orders | | Shipments | |
|---|---|---|---|---|
| 1928 | Actual tonnage | Per cent of capacity | Computed tonnage | Computed tonnage |
| November | 203,760 | 63 | 242,550 | 273,350 |
| Total (11 mos.) | ..... | 71 | 3,041,500 | 2,845,150 |
| December | 207,499 | 64 | 246,400 | 281,050 |
| Total (year) | ..... | 71 | *3,287,900 | 3,126,200 |
| 1929 | | | | |
| January | 277,103 | 71 | 273,350 | 281,050 |
| February | a222,723 | 69 | 265,650 | 238,700 |
| March | b296,343 | 93 | 358,050 | 277,200 |
| April | b277,926 | 87 | 334,950 | 304,150 |
| May | c284,319 | 89 | 342,650 | 311,850 |
| June* | d287,185 | 90 | 346,500 | 292,600 |
| July | e291,125 | 91 | 350,350 | 304,150 |
| August | g300,929 | 95 | 365,750 | 342,650 |
| September* | h260,694 | 83 | 319,550 | 323,400 |
| October* | k280,835 | *91 | *350,350 | 358,050 |
| November | 179,448 | 59 | 227,150 | 284,900 |
| Total (11 mos. | ..... | 83 | 3,534,300 | 3,318,700 |

a—Reported by 236 firms with a capacity of 320,900 tons; b—235 firms and 320,500 tons; c—233 firms and 319,450 tons; d—232 firms and 318,950 tons; e—231 firms and 318,750 tons; g—225 firms and 316,725 tons; h—223 firms and 315,030 tons; k—218 firms and 314,005 tons.

*Revised.

## Steel Castings Lower

Washington, Jan. 7.—New orders for steel castings in November decreased sharply from October, yet a total for the 11 months shows a large gain over the same period of 1928, according to the department of commerce. Monthly tables follow:

| | —Bookings— | | —Production— | |
|---|---|---|---|---|
| 1928 | Total net tons | †Railway specialties | Total net tons | †Railway specialties |
| Nov. | 84,318 | 34,545 | 81,955 | 30,799 |
| Total, 11 mo. | 899,445 | 345,935 | 935,308 | 345,080 |
| 1929 | | | | |
| Jan. | 124,313 | 64,809 | 93,413 | 35,689 |
| Feb. | 115,639 | 58,903 | 97,568 | 40,282 |
| March | 130,836 | 60,743 | 115,163 | 49,562 |
| April | 144,616 | 75,625 | 121,941 | 53,458 |
| May | 113,329 | 44,919 | 127,189 | 58,636 |
| June | 95,201 | 34,947 | 116,221 | 54,154 |
| July* | 103,356 | 37,731 | 118,100 | 51,989 |
| Aug.* | 98,697 | 35,906 | 118,458 | 50,548 |
| Sept.* | 85,859 | 33,463 | 106,268 | 44,609 |
| Oct.* | 134,183 | 72,379 | 119,382 | 49,917 |
| Nov.** | 88,424 | 41,295 | 102,599 | 49,789 |
| Total, 11 mo. | 1,214,453 | 560,720 | 1,236,302 | 538,633 |

*Revised.
**Preliminary.
†For tonnage of miscellaneous castings deduct railway specialties from the total.

**Shareholders of the Cockshutt Plow Co., Brantford, Ont., have approved increase of its capital by $200,000.**

## Pittsburgh Builds 300 Barges in 1929

Local builders of river equipment launched more than 300 steel hulls in 1929. Figures on awards of barges, towboats and other steel river equipment show that about 54,000 tons of steel plates and shapes was involved in their construction. This includes only equipment whose awards were announced, since a number of hulls were shipped from stock and their purchase was not published.

The largest individual order in 1929 was for 40 barges for the Inland Waterways Corp., involving 23,000 tons of steel. Three other orders each involved 3000 tons of steel, including 25 barges for the Memphis office of the United States engineers, 30 barges for the Wood Bros. Construction Co., Lincoln, Nebr., and 20 coal barges for the Basic Barge Line of the Davison Coke & Iron Co.

The American Bridge Co. and the Dravo Contracting Co., the two largest barge builders in the Pittsburgh district, accounted for about 60 per cent of the year's business, the remainder being divided between the Riter-Conley Co., Jones & Laughlin Steel Corp. and the Midland Barge Co.

Backlogs of barge builders have declined materially the past three months but the outlook for improved business during the first quarter is promising.

## Dominion Iron & Steel at Peak in 1929

Toronto, Ont., Jan. 7.—The greatest steel production in its history, not excepting the war years, is reported for 1929 by the Dominion Iron & Steel Co., Sydney, N. S. Production of steel ingots was 17,000 tons in excess of 1928. The principal yearly figures of production of 1929 are as follows: Iron ore, 1,500,000 gross tons; limestone and dolomite, 378,000 net tons; coke, 445,000 net tons; pig iron, 308,000 gross tons; and ingots, 407,000 gross tons. Of the company's products for 1929 the Canadian market absorbed about 88 per cent.

## Weirton Steel To Expand

Weirton, W. Va., Jan. 7.—Improvement plans of the Weirton Steel Co. for 1930, according to J. C. Williams, president, include reconstruction of the No. 1 blast furnace at Weirton, enlargement of the by-product coke plant and a mill to roll structurals, standard steel rails and other railroad materials. A site in the Chicago district has been bought by the company but no plans for immediate construction have been made. The Weirton company is a unit of the National Steel Corp.

## Look for Merger Terms

Cleveland, Jan. 7.—Terms governing the merger of the Republic Iron & Steel Co., Central Alloy Steel Corp., Donner Steel Co. and Bourne-Fuller Co. are expected to be announced shortly, perhaps next Monday.

Rumors persist that the new Republic group will acquire steel capacity at Birmingham, Ala., and also a large bolt and nut interest. Official confirmation is lacking.

## Coke Production Off; Bituminous Steady

Preliminary estimates for December place beehive coke production at 341,200 net tons, compared with 413,300 tons in November and 408,000 tons last December, according to the United States bureau of mines.

December output of bituminous coal is estimated at 46,200,000 tons, against 45,677,000 tons in November and 44,083,000 tons in December, 1928.

# December Slump in Ingot Rate Is Sharp but 1929 Stands as Record

STEEL ingot production in December declined to 115,851 gross tons daily, the lowest level plumbed since October, 1924. This retrenchment, following that of November, was insufficient, however, to neutralize the impressive lead piled up in the early months of 1929, and the December output of 2,896,269 tons gave the year a grand total of 54,164,348 tons. This easily surpassed the previous record—49,865,185 tons of 1928.

In December the industry was operating at 59.07 per cent of capacity, contrasted with 68.90 per cent in November and 85.26 per cent in December, 1928. The operating rate for the year was 88.81 per cent, compared with an average of 85.05 per cent in 1928.

In the accompanying table compiled by the American Iron and Steel institute are given comparisons for 1928 and 1929. The institute's figures include only open-hearth and bessemer ingots.

## Steel Ingot Production—1928-1929

**94.51 Per Cent of Industry Reporting**

**Gross Tons**

| 1928 | Open-hearth | Bessemer | Monthly output companies reporting | Calculated monthly output all companies | Number of working days | Approximate daily output all companies | Per cent of operation |
|---|---|---|---|---|---|---|---|
| Jan. | 3,273,294 | 498,691 | 3,771,985 | 3,990,902 | 26 | 153,496 | 81.42 |
| Feb. | 3,300,407 | 521,250 | 3,821,657 | 4,043,457 | 25 | 161,738 | 85.80 |
| March | 3,692,648 | 567,330 | 4,259,978 | 4,507,217 | 27 | 166,934 | 88.55 |
| April | 3,505,104 | 564,110 | 4,069,214 | 4,305,382 | 25 | 172,215 | 91.35 |
| May | 3,394,301 | 582,128 | 3,976,429 | 4,207,212 | 27 | 155,823 | 82.66 |
| June | 3,010,341 | 528,193 | 3,538,534 | 3,743,903 | 26 | 143,996 | 76.38 |
| July | 3,068,257 | 528,588 | 3,596,845 | 3,805,598 | 25 | 152,224 | 80.75 |
| Aug. | 3,379,625 | 569,771 | 3,949,396 | 4,178,610 | 27 | 154,763 | 82.10 |
| Sept. | 3,375,654 | 544,710 | 3,920,364 | 4,147,893 | 25 | 165,916 | 88.01 |
| Oct. | 3,795,800 | 599,098 | 4,394,898 | 4,649,968 | 27 | 172,221 | 91.36 |
| Nov. | 3,442,112 | 590,669 | 4,032,781 | 4,266,835 | 26 | 164,109 | 87.05 |
| Dec. | 3,301,114 | 496,679 | 3,797,793 | 4,018,208 | 25 | 160,728 | 85.26 |
| Total | 40,538,657 | 6,501,217 | 47,129,874 | 49,865,185 | 311 | 160,338 | 85.05 |
| 1929 | | | | | | | |
| Jan. | 3,694,218 | 549,616 | 4,243,834 | 4,490,354 | 27 | 166,309 | 84.80 |
| Feb. | 3,599,224 | 489,279 | 4,088,503 | 4,326,000 | 24 | 180,250 | 91.91 |
| March | 4,183,869 | 596,691 | 4,780,560 | 5,058,258 | 26 | 194,548 | 99.20 |
| April | 4,026,576 | 640,351 | 4,666,927 | 4,938,025 | 26 | 189,924 | 96.84 |
| May | 4,276,186 | 707,484 | 4,983,670 | 5,273,167 | 27 | 195,302 | 99.59 |
| June | 3,990,798 | 622,585 | 4,613,383 | 4,881,370 | 25 | 195,255 | 99.56 |
| July | 3,922,532 | 649,950 | 4,572,482 | 4,838,093 | 26 | 186,080 | 94.88 |
| Aug. | 3,988,729 | 668,023 | 4,656,752 | 4,927,258 | 27 | 182,491 | 93.05 |
| Sept. | 3,627,639 | 635,593 | 4,263,232 | 4,510,879 | 25 | 180,435 | 92.01 |
| Oct. | 3,619,432 | 644,528 | 4,263,960 | 4,511,650 | 27 | 167,098 | 85.21 |
| Nov. | 2,797,488 | 522,672 | 3,320,160 | 3,513,025 | 26 | 135,116 | 68.90 |
| Dec. | 2,376,775 | 360,489 | 2,737,264 | 2,896,269 | 25 | 115,851 | 59.07 |
| Total | 44,103,466 | 7,087,261 | 51,190,727 | 54,164,348 | 311 | 174,162 | 88.81 |

**Figures exclude crucible and electric ingots. Operation percentages for 1928 are based on an annual open-hearth and bessemer steel ingot capacity of 58,627,910 tons as of Dec. 31, 1927; 1929 percentages based on capacity of 60,990,810 tons as of Dec. 31, 1928.**

## Hope Tariff Bill Goes To Conference Feb. 15

Washington, Jan. 7.—Congress reconvened on Monday after its holiday recess and is now ready to go ahead full steam until next December if it so desires, this being the so-called long session.

The senate has made the tariff bill the unfinished business and there are all kinds of varying ideas as to when the bill will actually pass that body of congress and be sent to conference. Some of the guesses which seem nearest correct are around the middle of February.

Representative Garner, of Texas, Democratic minority leader in the house, has an idea that he may get together enough votes so that the bill can become law ten days after its passage by the senate. He would do this, he explains, by accepting the senate bill as to rates, and only take up in conference the question of the flexible tariff and the debenture plan. House leaders, however, believe the bill will be in conference a long time.

Senator Smoot, of Utah, chairman of the finance committee, told the President at a conference last week that he is hopeful that the bill can be sent to conference by Feb. 15.

## Harnischfeger Corp. Is Setting Up Fund

In addition to the distribution of $75,000 as a holiday bonus to its 2500 employes, the Harnischfeger Corp., Milwaukee, announced establishment of the Harnischfeger Foundation and endowment of it by Henry Harnischfeger, president, with 15,000 shares of corporate common stock, valued at $500,000. The foundation supplants the P & H Welfare association and will be administered by a committee of employes. It is the hope of the Harnischfeger family that at the end of five years, when the total of the 15,000 shares of stock will have been turned over to the foundation, that its earning power will be equal to that of an endowment of $1,000,000 and be able to establish a pension plan for employes, in addition to its charitable and recreational purposes. The holiday bonus direct to employes, based on company earnings, is the largest paid since the gift was instituted.

## To Sell Bay View Mills

Illinois Steel Co., Chicago, subsidiary of the United States Steel Corp., is contemplating abandoning its Bay View mills at Milwaukee. The mills have been only in intermittent operation in recent years, filling overflow orders from the Gary, South Chicago and Joliet works of the Illinois company. The site of the mills is desired by Milwaukee for rounding out its municipal harbor program and an option has been taken by the city to purchase the site for $5,000,000. The two blast furnace stacks at Bay View were abandoned in October.

## Sheet, Tin Plate and Bar Mill Wages Steady

Wages of workers in independent sheet and tin plate mills will remain unchanged for January and February, it was determined at the bi-monthly meeting of representatives of the mills and Amalgamated Association of Iron, Steel and Tin Workers in Youngstown. They are 27 per cent above base. Average of sales prices of the various grades on which wages are based was 3.05c per pound for November and December. Following is a comparison of price averages for preceding periods:

| | | | |
|---|---|---|---|
| Nov.-Dec. | 3.05c | | unchanged |
| Sept.-Oct. | 3.05c | | unchanged |
| July-Aug. | 3.05c | | unchanged |
| May-June | 3.65c | +1.5 | per cent |
| March-April | 3.00c | | unchanged |
| Jan.-Feb., 1929 | 3.00c | | unchanged |
| Nov.-Dec. | 3.00c | | unchanged |
| Sept.-Oct. | 3.00c | | unchanged |
| July-Aug. | 3.00c | | unchanged |
| May-June | 3.00c | | unchanged |
| March-April | 3.00c | | unchanged |
| Jan.-Feb., 1928 | 3.00c | | unchanged |
| Nov.-Dec. | 3.00c | —3 | per cent |
| Sept.-Oct. | 3.10c | +3 | per cent |
| July-Aug. | 3.00c | | unchanged |
| May-June | 3.00c | | unchanged |
| March-April, 1927 | 3.00c | —3 | per cent |

Bar mill wages for Amalgamated workers also remain unchanged for January and February, the average sales price of bar iron in November and December continuing at 2.00c per pound. Puddlers receive $11.80 a ton. Following are average sales prices for the periods designated:

| | 1930 | 1929 | 1928 | 1927 |
|---|---|---|---|---|
| Jan.-Feb. | 2.00c | 2.00c | 1.85c | 1.95c |
| March-April | ..... | 2.00c | 1.85c | 1.95c |
| May-June | ..... | 2.00c | 1.90c | 1.95c |
| July-Aug. | ..... | 2.00c | 1.90c | 1.95c |
| Sept.-Oct. | ..... | 2.00c | 1.95c | 1.90c |
| Nov.-Dec. | ..... | 2.00c | 2.00c | 1.85c |
| Yearly average | ..... | 2.00c | 1.908c | 1.925c |

## New Algoma Mills In

Toronto, Ont., Jan. 7.—The new 12-inch merchant mill of the Algoma Steel Corp., Sault Ste. Marie, Ont., will begin operations Jan. 15, it was officially announced. The new 18-inch mill has been working in good order since Dec. 16. At present a large portion of the plant is closed for annual repairs, which take about two weeks. The blooming mill resumed operations Jan. 3.

## Steelmakers Tell Hoover Business Is Good

Washington, Jan. 7.—"The steel companies informed me this morning," said President Hoover at his press conference Jan. 3, "that the effect of the drive is already showing in their orders, which are beyond their expectations." The drive referred to by the President is the construction program which he is urging at this time to keep business on an even keel.

"Our drive for increase in construction and improvement work," he continued, "to take up unemployment is showing most encouraging results and it looks as if the work undertaken will be larger for 1930 than for 1929.

"The department of commerce now has complete returns from the governors of 16 states covering public works to be undertaken in 1930 by state, municipal and county authorities. They have partial returns from 13 more states. The total so far reported, and including the federal government, is about $1,550,000,000 and in nearly all cases larger than for 1929. The surveys are coming in daily, and should be completed by mid-January.

"The preliminary estimate of the railways for construction and betterments for 1930 was $1,050,000,000 and for the public utilities $2,100,000,000, including the telephones. The total of these items so far is $4,700,000,000. This does not include the balance of the state, municipal and county work, nor the building construction, nor the industrial and factory improvements, which latter are now under survey by the special business committees."

## Appleton Steel Tube Co. in Receivership

Appleton Steel Tube Co., Appleton, Wis., manufacturing seamless steel tubing, has been placed in receivership by an order of the Outagamie circuit court. Judge Werner has appointed H. W. Tuttrup, president of the Citizenship National bank, Fond du Lac., Wis., receiver. The company, in answer to the complaint of creditors, admits all of the allegations and consents to the receivership, directors previously having passed a resolution that the company is unable to meet its obligations. The concern was established Dec. 1, 1927, with a capital stock of $100,000. An increase to $250,000 was voted last August, but it is understood little of the new stock was distributed. Officials said that the present situation was brought about by cancellation of orders.

# Steel Angles from Chicago

## Pullman Merger Braces Chicago in Car Building

## Implement Men, Like Roads, Buy Early for 1930

*Chicago, Jan. 7*

MERGER speculation involving railroad car building companies, particularly affairs of Pullman Inc., appears in the wake of the recent announcement that the latter company is to acquire the Standard Steel Car Co., with a plant in the Chicago district, and the Osgood-Bradley Car Co., Worcester,Mass.

The proposed merger has been regarded in some quarters as an initial step in a larger merger to include General American Tank Car Corp., with plants at East Chicago, Ind., Madison, Ill., Sand Springs, Okla., Ft. Worth, Tex., and New Orleans, with an aggregate productive capacity of 18,000 cars yearly. Officials of the two companies have conferred. Baldwin Locomotive Works is also named.

* * *

OTHER discussion is that a Pullman-General American alliance, if it has been under contemplation, is terminated for the present. It is reported that General American has been the third largest holder of Standard Steel Car stock, and that acquisition of the latter by Pullman gives General American an important hold.

Car building and repair work are an important feature of General American Tank Car Corp.'s operating capacity, but major revenues are derived from the rental of tank cars for the transportation of liquid products. This has been a growing business, and the corporation now has about 38,000 cars leased to various concerns, in addition to refrigerator cars leased to various shippers.

* * *

PULLMAN also has numerous varied interests, including the leasing of cars and their manufacture, the latter through its subsidiary, the Pullman Car & Mfg. Corp. In the Chicago district the company has foundries and plants at West Pullman, Ill., and Michigan City, Ind., and also operates a short industrial railroad.

Two years ago the company acquired the freight car building business of Tennessee Coal, Iron & Railroad Co., and has built a modern car building plant in the Birmingham, Ala., district. In the preceding year the company organized a wheel foundry at New Orleans—the New Orleans Car Wheel Co.—and purchased the Dickson Car Wheel Co., with a plant at Houston, Tex. In addition, Pullman has repair shops in six states.

* *

CAR building companies in this district are in the most favorable position as regard orders since the war years. Pullman and Standard have orders at virtually full capacity extending into second quarter, and General American is booked into June. The steady activity of steel foundries indicates the extent to which car builders and railroad supply interests have been active.

No doubt a number of mergers this year will bring changes in ownership of car building works in the Middle West. A Chicago car building company is seeking to acquire Youngstown Steel Car Co., with an 80-acre site and plant for making car repairs, dismantling cars and doing job work at Niles, O. That company went into receivership in 1926 and since has been operated on a small scale by William Wilkoff, president, under special arrangement with the receiver. Western Pipe & Steel Co. of Illinois, which some years ago developed pressed steel specialties for railroads, including a steel bulkhead for use in refrigerator cars, has been absorbed by Western Pipe & Steel Co. of California, with plants on the Pacific coast. The Illinois Co. has a plant at Blue Island. Ill.

* * *

ONE significant factor cited in the car building and railroad equipment markets here is the likelihood

that the freight traffic to be carried by the railroads over a period of years reasonably may be expected to show steady increases through normal economic expansion and growth in basic production.

Another view commonly expressed is that while automotive production likely will decrease from last year, that decline may be as much as 15 per cent and the iron and steel industry in the Chicago district will feel no drastic pinch, provided that four major consumers—railroad equipment, farm implement, road and excavating equipment and industrial machinery—continue in a sound productive position.

* * *

IT IS pointed out by some that the potentialities of the railroad equipment situation are not fully appreciated by those who recently have come to regard a moderate reduction in employment as inevitable during the year. There are those who declare that if equipment requirements for several years could be built in the coming year, the increases in employment in the car building and supply industry could offset an appreciable part of any reduction in the automobile industry.

If it is granted, they say, that the expectations for this year are for an automobile output of 4,500,000 cars, or a 20 per cent decline from 1929, and the drop in employment will be in relation, some 80,000 employes might be expected to be released by the automobile plants. Thus, it is asserted, an increase of 45 per cent in car and locomotive building operations would offset at least half of the decline in automobile employment.

* * *

APPROXIMATELY 1,000,000 tons of standard steel rails for 1930 rolling was on the books of Chicago district rail mills at the close of the year—the highest mark attained in such a relatively brief buying season. The active period began early in September.

From 50,000 to 75,000 tons still is outstanding in inquiries comprising primary needs for the year, beside the expected secondary and optional releases later. Eastern and western railroads, buying their track equipment and cars in this market, have given steel mills, railroad equipment and accessory manufacturers and foundries their first tangible backlogs of the year in a volume that is promising.

* * *

RECENT railroad sales activity again has established the Chicago district in a dominant position as a central buying area for the country's railroads. Before the rail buying closes for 1930 track laying programs, western mills will have booked more than half of the rails and track accessory tonnage. Of the new standard car units placed, totaling more than 105,000, western car building shops tapping the Chicago district steel distribution territory have been awarded more than 60 per cent. This percentage, while lighter than in recent years, maintains the relative balance for western producers.

* * *

RAIL mill operations in the Chicago district, at slightly above 85 per cent, are being maintained at about 15 per cent above the average operations of preceding years at this season. December, 1928, closed with about 70 per cent operations, and in the preceding year rail mills were about 75 per cent engaged.

At the close of 1926, an outstanding year of diversified steel consumption, rail mills in this district were operating at about 75 to 80 per cent. Rail mills of the Illinois Steel Co. now are producing above 85 per cent. Inland Steel Co., which also rolls structural steel on its rail mill, is producing slightly below that figure, but is getting ready to speed up operations. With the season approaching when shipments to some of the carriers will be requisitioned, it is being predicted that the district's rate will be stepped up to about 90 per cent shortly.

* * *

REPORTS of rail bookings indicate growing orders from the frog and switch makers, who are asking immediate shipment. This tonnage helped provide fill-in work on rail schedules at the tag end of the year. The advanced rail buying programs of the carriers this season have been a boon to the frog and switch and track supply manufacturers, who are looking forward to a relieved position at the beginning of the active shipping season in the spring. Frequently in recent years, the brief interval of orders and specified delivery dates has left barely enough margin for comfort in satisfactory execution of orders.

* * *

A HEAVY buying movement in track laying equipment, including track bolts, spikes and angle bars to go with the recent heavy rail orders, is close at hand, according to all information. Some estimates are that the tonnage to be closed in this district soon for spring delivery will amount to nearly 300,000. The Pennsylvania and New York Central lines, of course, top the list among individual roads, about 50 per cent of the two orders coming to the Chicago district.

By virtue of its premier position as a railroad center, Chicago is a leading track fastenings market with more than 225 manufacturers, including producers of railway signal equipment and relaying rails in the immediate manufacturing area. Twelve car building concerns have plants within or near Chicago territory.

* * *

CLOSELY following the bookings of railroad material, orders from the farm equipment makers have begun to provide backlogs for steel rolling mills and castings plants in this territory. The start in first quarter implement inquiries and sales began late in 1929.

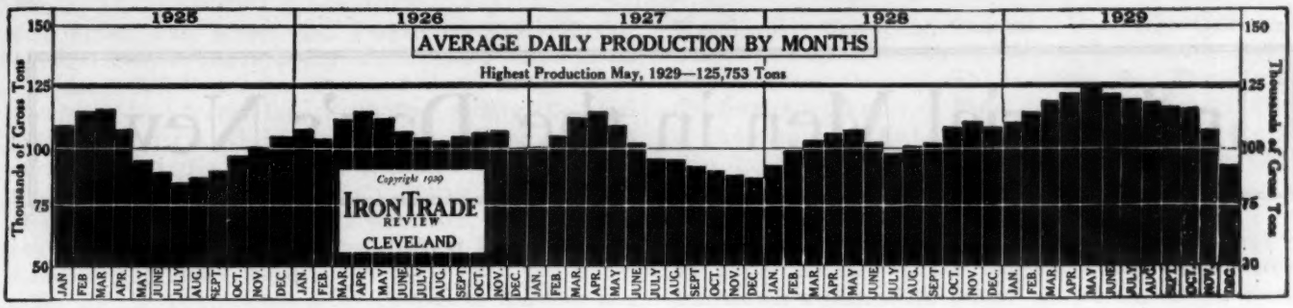
November sales of a number of leading farm equipment companies showed substantial gains over November, 1928. Domestic sales of 76 companies were 20.9 per cent above the preceding year, and export sales of 40 companies were up 31.7 per cent. November production of 74 companies computed from average employment during the month was 3.7 per cent above 1928, and 2 per cent above October, 1929.

* * *

THE 1929 implement business of a number of manufacturers was the best in about ten years. The outlook in the farm tractor industry is encouraging to the lines that supply the material for their construction. Malleable foundries in this territory, working in whole or in part on implement building have found orders gaining. In some instances the farm equipment bookings have compensated for declines in other lines.

Expansion in tractor sales in western farming areas during the past three years has necessitated general enlargements in productive capacity. International Harvester Co. has added equipment at its Chicago works, and Rock Island, Ill., plant. The capacity of the Rock Island tractor plant has been increased to an important extent in the past two years. J. I. Case Co. has added equipment and additions to its Racine, Wis., works, which has put the company's tractor output on a straight-line production basis.

A new straight-line production plant has been completed by Caterpillar Tractor Co. at Peoria, Ill., and this company will employ an additional 2000 to 3000 men in its enlarged foundries and assembly departments within 60 to 90 days. Monarch Tractor Co., at Springfield, Ill., a subsidiary of Allis-Chalmers Mfg. Co., Milwaukee, has just awarded contracts for quantity production plant buildings.




# 1929 Iron Record Despite Poor Close

PIG iron production in December broke to a daily rate of 91,513 gross tons and a total of 2,836,917 tons—the lowest since the third quarter of 1927—but the lead piled up in the early months of 1929 was sufficient to carry the year to a new high record. Total output of pig iron in 1929 was 42,270,183 tons. The previous peak was the 40,025,850 tons of 1923.

In November the net decline in active blast furnace stacks was 28, a condition not fully reflected in production statistics until December. In addition, there was a net loss of 19 stacks in December, bringing the number active as of Dec. 31 to 157. The year 1929 opened with 202 stacks active, and not since July, 1924, have so few stacks as 157 been in blast.

Nineteen twenty-nine goes into history as providing the longest period of decline in the daily rate in recent years. Beginning with June, the slide has been uninterrupted. From June to October the fall was only from 123,837 tons to 115,747 tons. In November the rate fell away to 106,081 tons, and in December it shrank about 15,000 tons, to 91,513.

As of Dec. 31 there were 316 potential blast furnaces in the United States. Last month the state-owned stack at Rusk, Tex., was sold for scrap.

Of the merchant stacks taken out of production in December the following accounted for one each: Donner Steel Co., Davison Coke & Iron Co., St. Louis Coke & Iron Corp., Youngstown Sheet & Tube Co., Shenango Furnace Co., M. A. Hanna & Co., and Delaware River Steel Co. The Woodward Iron Co. dropped two merchant stacks. The Illinois Steel Co. banked or blew out five steelworks stacks and brought in three. The Weirton Steel Co. lighted one stack. The National Tube Co. dropped two stacks, the Bethlehem Steel Co. three, and the Republic Iron & Steel Co., Central Alloy Steel Corp., Colorado Fuel & Iron Co., and American Rolling Mill Co. took off one each.

**MONTHLY PRODUCTION**

| | 1929 | 1928 | 1927 | 1926 |
|---|---|---|---|---|
| Jan. | 3,433,028 | 2,855,515 | 3,101,346 | 3,319,789 |
| Feb. | 3,218,376 | 2,898,668 | 2,940,604 | 2,923,850 |
| Mar. | 3,709,518 | 3,199,175 | 3,482,107 | 3,458,171 |
| April | 3,663,167 | 3,181,975 | 3,424,377 | 3,438,805 |
| May | 3,898,344 | 3,292,790 | 3,391,067 | 3,477,820 |
| June | 3,715,104 | 3,082,340 | 3,089,726 | 3,232,478 |
| July | 3,782,511 | 3,072,711 | 2,954,625 | 3,224,663 |
| Aug. | 3,746,198 | 3,136,995 | 2,950,674 | 3,200,723 |
| Sept. | 3,496,454 | 3,063,593 | 2,782,500 | 3,163,269 |
| Oct. | 3,588,146 | 3,373,539 | 2,812,015 | 3,334,206 |
| Nov. | 3,182,420 | 3,304,656 | 2,661,863 | 3,237,992 |
| Dec. | 2,836,917 | 3,369,784 | 2,698,208 | 3,089,175 |
| Total | 42,270,183 | 37,831,741 | 36,289,112 | 39,100,941 |

## Rate of Operation

**(Relation of Production to Capacity)**

| | 1929† | 1928* | 1927‡ |
|---|---|---|---|
| January | 80.3 | 67.8 | 71.2 |
| February | 83.3 | 73.6 | 74.7 |
| March | 86.7 | 76.1 | 79.8 |
| April | 88.7 | 78.0 | 81.2 |
| May | 91.1 | 78.3 | 77.7 |
| June | 89.8 | 76.0 | 73.2 |
| July | 88.4 | 73.2 | 67.7 |
| August | 87.3 | 74.4 | 67.6 |
| September | 84.5 | 75.2 | 65.9 |
| October | 83.9 | 79.3 | 64.5 |
| November | 76.9 | 81.1 | 63.0 |
| December | 66.3 | 80.2 | 61.8 |

**†Based on capacity of 50,367,665 tons as of Dec. 31, 1928. *Based on capacity of 49,605,720 tons. ‡Based on capacity of 51,379,400 tons. Capacities computed by American Iron and Steel institute.**

**AVERAGE DAILY PRODUCTION**

| | 1929 | 1928 | 1927 | 1926 | 1925 |
|---|---|---|---|---|---|
| Jan. | 110,742 | 92,113 | 100,043 | 107,039 | 108,781 |
| Feb. | 114,942 | 99,954 | 105,021 | 104,423 | 114,788 |
| Mar. | 119,662 | 103,199 | 112,326 | 111,554 | 115,207 |
| Apr. | 122,106 | 106,066 | 114,146 | 114,627 | 107,041 |
| May | 125,753 | 106,219 | 109,388 | 112,187 | 94,642 |
| June | 123,837 | 102,745 | 102,991 | 107,749 | 89,301 |
| July | 122,016 | 99,120 | 95,311 | 104,021 | 85,976 |
| Aug. | 120,845 | 101,193 | 95,183 | 103,249 | 87,328 |
| Sept. | 116,548 | 102,120 | 92,750 | 105,442 | 90,862 |
| Oct. | 115,747 | 108,824 | 90,710 | 107,555 | 97,351 |
| Nov. | 106,081 | 110,155 | 88,728 | 107,933 | 100,775 |
| Dec. | 91,513 | 108,702 | 87,039 | 99,651 | 104,808 |
| Ave. | 115,808 | 103,365 | 99,422 | 107,126 | 99,645 |

**DIVISION OF PRODUCTION**

| 1928 | Merchant | Non-merchant | Spiegel and ferro-manganese |
|---|---|---|---|
| Jan. | 649,654 | 2,205,861 | 32,510 |
| Feb. | 579,298 | 2,319,370 | 27,376 |
| Mar. | 597,106 | 2,602,069 | 34,587 |
| Apr. | 586,045 | 2,595,930 | 33,599 |
| May | 596,664 | 2,696,126 | 38,466 |
| June | 589,127 | 2,493,213 | 38,628 |
| July | 584,611 | 2,488,100 | 42,230 |
| Aug. | 563,510 | 2,573,485 | 33,585 |
| Sept. | 580,344 | 2,483,249 | 31,170 |
| Oct. | 643,043 | 2,730,496 | 33,519 |
| Nov. | 632,869 | 2,671,787 | 38,811 |
| Dec. | 686,431 | 2,683,353 | 34,541 |
| Total | 7,288,702 | 30,543,039 | 419,022 |
| 1929 | | | |
| Jan. | 744,448 | 2,688,580 | 37,210 |
| Feb. | 665,648 | 2,552,728 | 34,419 |
| Mar. | 740,966 | 2,968,552 | 37,997 |
| Apr. | 740,311 | 2,922,856 | 44,406 |
| May | 772,014 | 3,126,330 | 35,598 |
| June | 716,715 | 2,998,389 | 43,218 |
| July | 741,622 | 3,040,889 | 31,137 |
| Aug. | 682,048 | 3,064,150 | 40,527 |
| Sept. | 643,197 | 2,853,257 | 38,038 |
| October | 739,060 | 2,849,086 | 39,640 |
| Nov. | 737,591 | 2,444,829 | 37,328 |
| Dec. | 661,343 | 2,175,574 | 40,375 |
| Total 12 mos. | 8,584,963 | 33,685,220 | 459,893 |

**DECEMBER PIG IRON PRODUCTION**

| | No. in blast last day of month December | No. in blast last day of month November | Total tonnage made Merchant | Total tonnage made Nonmerchant | Totals December | Totals November |
|---|---|---|---|---|---|---|
| Ohio | 32 | 38 | 140,743 | 450,119 | 590,862 | 752,242 |
| Pennsylvania | 54 | 57 | 118,119 | 789,192 | 907,311 | 979,472 |
| Alabama | 14 | 16 | 100,398 | 129,256 | 229,654 | 228,157 |
| New York | 11 | 13 | 85,922 | 75,166 | 161,088 | 214,235 |
| Illinois | 15 | 17 | 131,606 | 178,429 | 310,035 | 332,625 |
| Colorado | 3 | 4 | | | | |
| Indiana | 11 | 12 | | | | |
| Maryland | 4 | 5 | 20,506 | 393,267 | 413,773 | 455,152 |
| Virginia | 2 | 2 | | | | |
| Wisconsin | 0 | 0 | | | | |
| Kentucky | 0 | 1 | | | | |
| Massachusetts | 1 | 1 | | | | |
| Tennessee | 1 | 1 | 22,135 | 78,369 | 100,504 | 96,254 |
| Utah | 1 | 1 | | | | |
| West Virginia | 3 | 2 | | | | |
| Michigan | 3 | 4 | | | | |
| Minnesota | 2 | 2 | | | | |
| Missouri | 0 | 0 | 33,560 | 49,755 | 83,315 | 86,955 |
| New Jersey | 0 | 0 | | | | |
| Spiegel and ferro—all states | .... | .... | 8,354 | 32,021 | 40,375 | 37,328 |
| Total | 157 | 176 | 661,343 | 2,175,574 | 2,836,917 | 3,182,420 |

# Industrial Men in the Day's News

James F. Drake, Chairman of the Board, Pullman Inc.

*PRESIDENT of a car company only since November, 1923, he now becomes chairman of a holding company which will direct a large portion of the country's car building capacity.*

*NOT quite 50 years of age, he thus assumes a top position in an industry, with which he has been identified but seven years.*

*PRIOR to that he had been affiliated with an oil corporation, had seen governmental and wartime service, and had had publishing experience at Springfield, Mass.*

WITHIN the 27 years which have elapsed since he left college, James F. Drake, not yet 50 years old, has had a career both kaleidescopic and colorful. As noted on page 49 of IRON TRADE REVIEW of Jan. 2, he becomes chairman of Pullman Inc., which will form a new subsidiary to acquire and operate as a separate unit, Standard Steel Car Co., Pittsburgh and Butler, Pa., of which Mr. Drake has been president since November, 1923, and the Osgood-Bradley Car Co., Worcester, Mass. The merged interests have assets in excess of $400,000,000 and its operations will include plants for manufacturing passenger and freight cars, castings and parts in Butler, Pa., Hammond, Ind., St. Paul, Richmond, Va., Worcester and Sagamore, Mass., Michigan City, Ind., Pullman, Ill., Birmingham, Ala., Houston, Tex., and Ellwood City, Pa. The Middletown Car Co., subsidiary of Standard Steel Car, maintains assembly plants at Rio de Janeiro, Brazil and La Rochelle, France. The proposed company is to have offices in New York, Chicago, Pittsburgh, Paris, Rio de Janeiro, Sao Paulo, Buenos Aires and Capetown, South Africa.

Mr. Drake, born in Pittsfield, N. H., Sept. 1, 1880, was educated at Kimball Union academy, Meriden, N. H., and was graduated from Dartmouth college in 1902 with an A.B. degree and from Amos Tuck school of administration and finance in 1903 with a degree of master of commercial science. His first position was as secretary of the board of trade, Springfield, Mass., in which office he served until 1908. He then became secretary of the Phelps Publishing Co., Springfield, and in 1914 was made treasurer and a director, holding that office until May, 1918. During his 15-year residence in Springfield he was actively affiliated with numerous business enterprises and took a prominent part in civic affairs, serving five years, 1908-12, on the common council of Springfield. He was nominated in 1910 by both the democratic and republican parties and, though the youngest member, was chosen president of the common council and re-elected in 1911 and 1912. On May 10, 1918, he was commissioned major in the ordnance department of the United States army, reporting June 1 at Washington, but was shortly sent to Pittsburgh as commanding officer of the finance division, Pittsburgh district ordnance office. In December, 1918, he was appointed a member of the claims board of the Pittsburgh district, which had charge of all ordnance contracts cancelled in that territory when the armistice was declared. On March 25, 1919, he was promoted to the rank of lieutenant colonel and on June 3, that year, was honorably discharged from the service but the next day was appointed civilian member of the claims board and acted in an advisory capacity until Dec. 3, 1919. On that date he became assistant to the president of the Gulf Oil Corp., Pittsburgh.

In January, 1923, he became vice president and in November of that year president of the Standard Steel Car Co., with headquarters in Pittsburgh, as well as president of the following companies: Baltimore Car & Foundry Co., Middletown Car Co., Butler Bolt & Rivet

Co., Butler Car Wheel Co., Forged Steel Wheel Co., Lyndora Land & Improvement Co., Standard Motor Truck Co., Steel Car Forge Co., Standard Car Finance Corp., Richmond Car Works Inc., Keith Car & Mfg. Co., and Siems-Stembel Co., all controlled by the Mellon interests of Pittsburgh. He also is vice president and director of the Pittsburgh Equitable Meter Co., Pittsburgh, a director of the Osgood-Bradley Car Co., Worcester, Mass., American Rolling Mill Co., Middletown, O., and Lilpop, Raul & Lowenstein, Warsaw, Poland.

During the administrations of Presidents Harding and Coolidge he was closely associated with Andrew W. Mellon, secretary of the treasury, serving chiefly in a private, confidential capacity.

Always fond of outdoor sports, especially football, golf and tennis, he has numerous club and fraternal connections. He is a member of the Sons of the American Revolution, American Legion, Military Order of the World War, Cosmos, Congressional Country and University clubs, Washington; University, Duquesne, Pittsburgh Golf, Fox Chapel Golf clubs, Pittsburgh; Rolling Rock club, Ligonier, Pa.; Allegheny Country club, Sewickley, Pa.; Theta Delta Chi fraternity; American Philatelic society; Bankers' Club of America and Embassy club, New York; Embassy club, London; Wianno club, Wianno, Mass.; Hyannisport club, Hyannisport, Mass.; and Ribault club, St. George, Fla.

Both as an undergraduate and alumnus, he has taken an active interest in the welfare of his alma mater, Dartmouth college. He served as trustee of his class, president of the Dartmouth Alumni associations of western Massachusetts and western Pennsylvania and for several years was a member of the Dartmouth college alumni council. He managed the Dartmouth-Brown football games in 1905 and 1906 and always has taken an active part in affairs of Theta Delta Chi, his college fraternity, and has served many times as representative of the Dartmouth chapter at the annual national conventions.

# Men of the Industry

J H. BELKNAP was recently appointed manager of control engineering department of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to succeed E. B. Newill, resigned to become assistant to the president of the Delco Products Co., a subsidiary of General Motors Corp. Mr. Belknap was graduated from Oregon State Agricultural college in 1912 with a bachelor of science degree and taught there for several years. He served 18 months in the army and was in the government forestry service for three seasons. In June, 1923, he became identified with the control engineering department of the Westinghouse company and a year later was appointed section engineer in charge of customers' service in that department. He held that position until his recent promotion.

* * *

Amos G. Bussmann, formerly welding engineer for the American Steel & Wire Co., New York, resigned recently to become president of the Standard Steel & Wire Co., First National Bank building, Greensburg, Pa., with plant at Bolivar, Pa., manufacturing electric, gas and toncan copper molybdenum iron welding wires. Prior to his last position, Mr. Bussmann was chief chemist at the Donora, Pa., steelworks of the American Steel & Wire Co. in close touch with operative departments, such as the blast furnaces, open hearths, blooming mills, rod mills, wire drawing and other finishing mills.

* * *

J. F. Donahue, president of the Foster Bolt & Nut Mfg. Co., Cleveland, becomes a vice president, member of the executive committee, and director, Lamson & Sessions Co.,

ERWIN E. DREESE

Cleveland, which has acquired the Foster company. He will have charge of western operations.

A. M. Foster, of Cleveland, a founder of the Foster company, and H. O. Smith of Buffalo, also have been elected to the board of directors of the Lamson & Sessions Co., to serve with Mr. Donahue, J. G. Jennings, chairman of the board, George S. Case, president, and N. J. Clarke, vice president and chairman of the executive committee.

* * *

Erwin E. Dreese, chief engineer, Lincoln Electric Co., Cleveland, on Jan. 1 became professor of electrical engineering at Ohio State university, Columbus, O. Mr. Dreese graduated from Petosky, Mich., high school in 1913 and returned to that school to teach for two years before entering the University of Michigan. His studies there were interrupted in 1917 when he enlisted for the duration of the war in the signal corps, United States army, as a private. When hostilities ceased, Mr. Dreese was a company commander in a signal officers' training camp.

In 1919 he re-entered the University of Michigan and was graduated there in 1920 with a degree in electrical engineering. Upon graduation he was made instructor of electrical engineering at that school, teaching for four years, working for a master of science degree, which he received in 1924. He then became identified with the Lincoln Electric Co. and within one year was made chief engineer. In June, 1929, he was recalled to the University of Michigan to receive the professional doctor's degree of electrical engineer, a distinction said to have been conferred only once previously by that institution.

Professor Dreese is a member of Tau Beta Pi, honorary engineering fraternity, and of Sigma Xi, honorary scientific society. He is also a member of the American Institute of Engineers. While teaching he engaged in numerous projects of engineering

investigation and research, and since joining the Lincoln company has presented numerous papers before engineering societies.

The board of trustees of Ohio State university voted its formal thanks to J. F. Lincoln, president of the Lincoln company, whose co-operation made the appointment possible.

* * *

C. K. Charlton has been appointed superintendent of foundries of the Bucyrus-Erie Co., Milwaukee.

* * *

E. C. Kirby has been placed in charge of the Houston, Tex., office recently opened at 601 Post-Dispatch building by the Naylor Pipe Co.

* * *

A. L. Humphrey, president, Westinghouse Airbrake Co., Pittsburgh, has been appointed for another 3-year term as director, Pittsburgh branch, Federal Reserve Bank, Cleveland.

* * *

H. D. Matthews, formerly section engineer, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., was recently made consulting engineer for the W. M. Chase Valve Co., Detroit.

* * *

Albert E. Edwards, formerly with Nichols & Shepard Co., Battle Creek, Mich., has become identified with the Chevrolet Motor Co. division of the General Motors Corp.

* * *

Henry Meister, assistant superintendent of the Mid-States Steel & Wire Co., Crawfordsville, Ind., connected with the steel industry for 50 years, retired Jan. 1 on a pension by the company.

* * *

H. V. Blaxter, chairman of the board of the Mackintosh-Hemphill Co., Pittsburgh, and director of the Woodard Machine Co., Wooster, O., has been elected a director of the Union National Bank of Pittsburgh.

* * *

Harry O'Connor, superintendent of the American Steel & Wire Co., Anderson, Ind., resigned effective Jan. 1 to retire and live on a farm near that city. He has been in the steel business 44 years and has been in charge of the Anderson mill for 13 years.

* * *

Charles E. Acker, assistant treasurer of Baldwin Locomotive Works, Philadelphia, has been elected treasurer to succeed William De Krafft, who became chairman of finance committee of United States Rubber Corp., Jan. 10.

* * *

William Lolley, Buffalo, has been elected president of the Ludlow Valve Corp., Troy, N. Y. He succeeds James H. Caldwell, who had been president 23 years and associated with the company since 1888. Mr. Caldwell becomes chairman of the executive committee.

* * *

E. R. Weber has resigned as assistant chief engineer of the R. D. Nuttall division of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., to become chief engineer, Thomas Spacing Machine Co., Pittsburgh, manufacturer of structural and bridge machinery.

* * *

Edward A. France, district sales manager at Cleveland for the Jones & Laughlin Steel Corp., celebrated his

EDWARD A. FRANCE

twenty-fifth anniversary with the corporation Jan. 1. He was presented with gifts by his office force. The first six years of his connection with the Jones & Laughlin corporation Mr. France spent in the Pittsburgh offices; the latter 19 at Cleveland, where he has been district sales manager since Jan. 1, 1919.

* * *

Ray M. Hudson, formerly assistant director, bureau of standards, commercial standardization group, has resigned to become secretary of the Massachusetts division, New England council, with headquarters in Boston. Mr. Hudson was graduated from Syracuse university in 1908 and since that time has been engaged in the commerce standardization field specializing in simplification, standardization and scientific management. Prior to his connection with the bureau of standards, Mr. Hudson was associated with Col. George D. Babcock. During the war he served as production engineer with the Emergency Fleet corporation. Mr. Hudson is a member of the Taylor society, Society of Automotive Engineers, and many other societies and committees.

* * *

Gilbert Polen, formerly foreman in the cleaning and finishing department of the Alliance, O., works of the American Steel Foundries, Chicago, has been transferred to the Verona, Pa., works of the company in a similar capacity.

Fred Maple, formerly foundry superintendent of the Alliance, O., plant, and more recently at the Chester, Pa., works, has been appointed shop superintendent of the Verona works.

* * *

Charles A. Barnett, president of the Foundry Equipment Co., 1831 Columbus road, Cleveland, will continue in that office in a company representing the merger of the Foundry Equipment Co., with the industrial oven department of the Swartwout Co., Cleveland, manufacturer of industrial ovens. Other officers are Julius Tuteur, chairman; O. D. Conover, vice president; A. V. Cannon, secretary; and A. F. Woehrmann, treasurer.

Carl F. Mayer, formerly manager of the Swartwout oven department, will direct the technical oven staff of the Swartwout company, to be retained and operated as the Swartwout industrial oven division of the Foundry Equipment Co.

* * *

Charles E. Wilson has been appointed manager of the merchandise department of the General Electric Co., Schenectady, N. Y., to succeed the late Maj. H. C. Houck.

George C. Osborn, general sales manager, Edison lamp division, and W. T. L. Cogger, in charge of the vacuum tube department of the Edison lamp works, Harrison, N. J., have resigned to become associated with the RCA Radiotron Co. as vice president in charge of sales and vice president in charge of production, respectively.

T. W. Frech, vice president of the General Electric Co., has been granted a 12-month leave of absence. He will become president of the RCA Radiotron Co.

* * *

A. F. Marwick, formerly general sales manager for the Pettibone-Mulliken Co., Chicago, has become affiliated with the Chicago district sales staff of the Taylor-Wharton Iron & Steel Co., High Bridge, N. J., and William Wharton Jr. & Co. Inc., Easton, Pa.

G. V. Wood, formerly located at the

(*Continued on Page* 70)

# Steel Mergers Revive Interest in Great Lakes Vessel Lineup

## *Negotiations for Union of Independents Dormant, but Other Influences Are Felt—Corporation Building Up Fleet with Larger Units*

RECENT mergers in the iron and steel industry, including companies with important vessel affiliations, have raised the question as to how the latter interests will fit into the new picture. The mergers have had a far-reaching effect in the Lake Superior iron ore industry. Their influence eventually will be felt in the setup of the independent Great Lakes fleet of ore, coal and grain carriers, though not much change appears on the surface at present. The steel mergers have revived rumors of negotiations for a grouping of certain vessel companies, but such a step is not a probability for the near future.

A leader among the vessel men tried to bring the independent interests together, but he died a year ago. Another figure in the industry tried to carry the task to completion, and he died last August. Though neither one had much to gain directly, they sought to perform a service for the independent vessel owners. In June, Otis & Co., Cleveland investment bankers, proposed a merger of 17 owners, taking in a fleet of about 100 vessels.

### Merger Would Reduce Overhead

This plan failed of consummation, though many appreciated its advantages. Some of the owners are said to have held out for a valuation much larger than that of their boats. They have long-term contracts and considered the value of their property in relation to assured business. The advantage of a merger would be to reduce overhead, and to lay up boats in preference to demoralizing a market.

The merger of the Republic Iron & Steel Co., Central Alloy Steel Corp., Donner Steel Co., and Bourne-Fuller Co. has not greatly affected the vessel situation. The M. A. Hanna Co. carries ore for the Republic company, while the Cleveland-Cliffs Iron Co.'s fleet performs a like service for Central Alloy. Bourne-Fuller have a connection with the Kinney Steamship Co., which operates five vessels. Donner Steel Co. has one, the steamer H. F. BLACK, 9000 tons capacity, which it purchased from the Hanna company in 1929. This is the only vessel owned by the new group.

The merger of the Weirton Steel Co., Great Lakes Steel Corp., and the M. A. Hanna Co. subsidiaries into the National Steel Corp. does not entail any change in vessel connections. Weirton had no vessel interests, and a large share of its ore was carried in Hanna boats. The Great Lakes will not consume ore, but will buy pig iron from Hanna furnaces at Detroit.

### Vessel Situation Unaffected By Merger

Merger of the Toledo Furnace Co., By-Products Coke Corp., Zenith Furnace Co., Perry Iron Co., and related iron ore, coke and coal properties, does not affect the vessel situation. Ore for the Interlake Iron Corp. units will be carried as heretofore by the Interlake Steamship Co., subsidiary of Pickands, Mather & Co.

Closer association of some of the companies will result in more attention being given to their own requirements, in vessel capacity, as in other respects.

The Pittsburgh Steamship Co., subsidiary of the United States Steel Corp., will not handle all of the corporation's iron ore this year, despite reports that the addition of three vessels to its fleet in 1929 will tend to make it "self-contained." It is considered doubtful if the Pittsburgh company desires to be "self-contained," because of the ups and downs in the volume of shipments. A "self-contained" fleet would be ideal in a year of heavy shipments, but in a lean period, the excess capacity would prove a burden. Consequently, it is evidently the company's policy to maintain a certain leeway between its capacity and full requirements. A half dozen of the larger independent carriers share in the Pittsburgh company's demand for extra capacity.

It is estimated the corporation carried about two-thirds of its Lake Superior iron ore in its own boats in 1929, giving about 10,000,000 tons to others. The "guess" in the trade today as to the total amount of ore that will be shipped by lake in 1930 is 53,000,000 tons. Allowing for the fact that there will be less demand than in 1929, also for the fact that the Pittsburgh company added three modern carriers to its fleet in 1929, and eliminated three small ones, it will have probably 4,000,000 tons for the independent carriers this year. This is based on the average number of trips in a season, and certain other factors which may vary; but the point is that the corporation will continue to have a substantial tonnage for the independents.

The corporation began the season of 1929 with 87 vessels, including steamers and barges, having a total trip capacity on a 19-foot draft of 723,200 tons. It was the only vessel interest to bring out new boats during the year. It added the MYRON C. TAYLOR, the WILLIAM G. CLYDE and the HORACE JOHNSON, each of 12,000 tons capacity. It dropped the barge THOMAS, 5400 tons capacity, and the steamers, MARIPOSA, 4100 tons, and MARITANA, 4100 tons.

### Pittsburgh Fleet Gains in Tonnage

The result is the Pittsburgh fleet now comprises 84 vessels—three less than a year ago—but it has made a net gain of 13,600 tons per trip capacity. It must be remembered that the trip capacities are figured on a normal 19-foot water stage, whereas with 20.9 feet, as in 1929, 15 per cent is added to trip capacity.

The Pittsburgh company did not add any vessel to its fleet in 1928, but dropped three of its smaller ones. In 1927 it added the A. F. HARVEY and the B. F. AFFLECK, 12,000-ton boats, and dropped five small ones. Six

(*Concluded on Page* 74)

# Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

FOUNDRY EQUIPMENT CO., Cleveland, which for several years has devoted its production exclusively to foundry ovens for baking cores and drying molds, has taken over the industrial oven department of the Swartwout Co., Cleveland. The latter company, in addition to foundry ovens, has manufactured industrial ovens for paint drying, japanning, processing and other uses. Consolidation of these two lines will enable the Foundry Equipment Co. to cover the entire industrial field. The technical oven staff of the Swartwout Co. is retained and will operate the department as the Swartwout industrial oven department under direction of Carl F. Mayer.

Additional office space has been made necessary by this enlargement. The main office and plant are at 1831 Columbus road. Office space has been taken also in the Perry-Payne building. Additions to the plant and offices will be made later. Officers include Julius Tuteur, chairman of the board; Charles A. Barnett, president; O. D. Conover, vice president; A. V. Cannon, secretary; A. F. Woehrmann, treasurer. The company is building a battery of 46 ovens with oil combustion system for the Lycoming motor division of the Auburn Automobile Co.; a continuous unit 250 feet long for the General Steel Castings Corp., Eddystone, Pa.; two installations for use in tractor foundries in Russia, and two large continuous ovens for the new foundry of the Bendix Aviation Corp.

* * *

GARDNER-DENVER CO., Quincy, Ill., has opened a branch sales office and warehouse at 38 North Guthrie street, Tulsa, Okla. J. F. Ward is manager.

* * *

GARDEN CITY PLATING & MFG. CO., 1430 Talman avenue, Chicago, has enlarged its plant headquarters through a lease on 23,000 square feet of floor space in an adjoining building.

* * *

AMERICAN BOILER & TANK CO., 2722 Hillock avenue, Chicago, has purchased a site fronting 330 feet on the Grand Trunk railroad property south of the Clearing industrial district, Chicago. The company, which makes boilers, tanks and smokestacks, plans future development.

* * *

HETHERINGTON & BERNER INC., Indianapolis, has been formed by consolidation of Robert Berner Structural Steel Co. and Hetherington & Berner, fabricators of structural steel and manufacturers of steel storage bins, centrifugal sand and dredging pumps, dredging machinery and complete steel dredges.

* * *

LITTERER BROS. MFG. CO., 3022-3032 North Rockwell street, Chicago, sheet metal fabricator, has been absorbed by the Milwaukee Stamping Co., Milwaukee. The Litterer company will be operated as a unit of the Milwaukee company. Manufacturing operations will be carried on in Milwaukee, while an office and warehouse will be maintained in Chicago.

* * *

NEWTON STEEL CO., Youngstown, O., is placing on the market an issue of $3,000,000 6 per cent convertible gold notes, the proceeds to be used toward the cost of the company's new $7,000,000 plant at Monroe, Mich. The notes are convertible into common stock on the basis of $83.33 a share. The new plant at Monroe is expected to be in production in February.

* * *

THOMPSON PRODUCTS INC., Cleveland, manufacturer of automotive products, has called a meeting for Jan. 13 of all class A and B stockholders to act on a proposal to exchange this stock, share for share, for a new common stock of no par value and equal voting rights. On approval of the recapitalization plan the stock will be listed on the New York Stock exchange, thus obtaining a wider distribution.

* * *

HOUDAILLE HERSHEY CORP. has bought a substantial interest in the Schwitzer-Cummins Co., Indianapolis, manufacturer of cooling fans, water and oil pumps, superchargers and other automotive products. Oakes Products Corp., a division of the Houdaille company, has moved its equipment from Detroit and Indianapolis to North Chicago, Ill., where it will continue its production of automotive material.

* * *

McNALLY-TALLEFSON CO., Stoughton, Wis., manufacturer of gray iron castings, has arranged for a merger of interests with the Stoughton Co., also of Stoughton. The McNally foundry will take over all of the gray iron work of the Stoughton Co. shop, which in the future will devote its attention to nonferrous products, principally brass and aluminum castings. John E. McNally is general manager.

* * *

GARDNER MACHINE CO., Beloit, Wis., has in process of manufacture the largest machine it has ever undertaken to build. It is a special grinder for facing refractory brick. The machine is 36 feet long and about 8 feet high, and will weigh 35 tons. It has a 40-inch grinding wheel. Bricks are carried on a traveling slide, making the grinding process continuous. It is automatic in operation. The Gardner company has recently shipped six flat surface work grinders to the Russian Soviet government and is also working on another large order for Russia.

* * *

LINDE AIR PRODUCTS CO., 30 East Forty-second street, New York, recently has opened a new oxygen plant at 60 Knott street, Portland, Oreg. A. D. Davis is superintendent and D. F. Fox, 114 Sansome street, San Francisco, is district superintendent.

* * *

WESTINGHOUSE ELECTRIC & MFG. CO., East Pittsburgh, Pa., has taken an order from the Consolidated Steel Corp., Los Angeles, for direct traction hoist equipment to be installed in the main shaft at the Estrella underground mine of the Nevada Consolidated Copper Co., China, N. Mex. The hoist will operate a single cage and counterweight in the vertical shaft 660 feet deep, at a maximum hoisting speed of 700 feet per minute. Design of the hoist is similar to the type employed in office buildings but it is considerably

larger than any yet developed in this line. It will be used for men and supplies but is sufficiently rugged to hoist ore continuously.

* * *

SABINE SUPPLY CO., Orange, Tex., heavy hardware and mill supply jobber, has authorized an increase of its capital stock to $400,000.

* * *

CENTRAL TEXAS IRON WORKS, Waco, Tex., has acquired a site at Abilene, Tex., and will erect a branch plant for fabrication of structural and reinforcing steel.

* * *

CARLSON FORGINGS CO., Chicago, has occupied its new plant at 1052 North Kolmar avenue. The company manufactures pneumatic tools and does forging on contract.

* * *

KING COAL & SUPPLY CO., Gay and Asquith streets, Baltimore, has been appointed representative of the Ironton Fire Brick Co., Ironton, O. Stocks of brick will be carried.

* * *

COPPER AND BRASS RESEARCH association will open an office at Washington, in the Shoreham building. It will be in charge of Donald McGregor.

* * *

TULSA BOILER & MACHINERY CO., Tulsa, Okla., has been appointed Mid-Continent warehouse representative for Champion Rivet Co., Cleveland, manufacturer of boiler, tank and structural rivets.

* * *

CONNECTICUT BROACH & MACHINE CO., New Britain, Conn., manufacturer of broaching tools, has taken over a large part of the factory space formerly used by the J. N. Lapoint Co., for production expansion.

* * *

GENERAL AIRPLANES CO., Buffalo, has been bought by Harry Paltrowitz, president of Marine Metal & Supply Co., Buffalo, who will continue production of planes. Fred R. Shores, of the Industrial Plants Corp., will be president.

* * *

H. B. SACKETT SCREEN & CHUTE CO., 1691 Elston avenue, Chicago, has acquired from W. A. Jones Foundry & Machine Co. property at Elston and Wabansia avenues, Chicago, which it has occupied for a number of years.

* * *

REED & PRINCE MFG. CO., Worcester, Mass., manufacturer of screw products, has bought a plant at 3635 Iron street, Chicago, containing 25,000 square feet of floor space and a large site. It will be used to increase warehousing facilities, moving from 121 North Jefferson street.

* * *

H G. WEEKS MFG. CO., Goshen, Ind., manufacturer of electric and gas ranges, has been sold to the Florence Stove Co., Kankakee, Ill., and stock and equipment has been moved to the latter city. H. G. Weeks, president, has been made engineer and manager of sales for the Florence company.

* * *

LEEDS & NORTHRUP CO., Philadelphia, recently celebrated the opening of an addition to its plant by a minstrel show and dance. The latest addition, one step in a series of enlargements, increases floor space from two to four acres. It takes in the entire neighboring plant formerly occupied by the Atwater Kent Mfg. Co.

* * *

ATLAS METAL WORKS, Dallas, Tex., has moved to new plant recently completed on Eagle Ford road. Besides warehouses and offices, a large factory building, 200 x 210 feet, was erected for manufacture of culverts and a general line of sheet metal products. L. A. Stemmons is president, and Boude Storey, secretary-treasurer and general manager.

* * *

ROSE-HOSKINS SUPPLY CO. INC., Houston, Tex., has been organized to handle a jobbing line of heavy hardware, mill supplies and oil field equipment. Cy Hoskins is president, George Rose, vice president and general manager and R. P. Goodman, secretary-treasurer. All three officials were formerly with E. L. Wilson Hardware Co., Beaumont, Tex., which was consolidated a few months ago with the Peden Co., of Houston.

* * *

BARRETT-CRAVENS CO., Chicago, Walker Vehicle Co., Chicago, and Automatic Transportation Co. Inc., Buffalo, have been merged. The Walker company, a subsidiary of the Commonwealth Edison Co., Chicago, has bought the capital stock of the Barrett-Cravens Co. The latter manufactures lift trucks and platforms and the Walker company produces electric trucks for street use. The Automatic company manufactures industrial trucks and tractors.

* * *

CORUNDITE REFRACTORIES INC., Massillon, O., has bought the plant and holdings of the Imperial Fire Brick Co., Dover, O. The purchase includes over 400 acres of clay and coal land in the Strasburg field. The plant will be continued in operation with personnel unchanged. Corundite Refractories was founded in 1882 as the Massillon Stone & Fire Brick Co., changing its name a few years ago to identify it more closely with its product.

* * *

NORTON CO., Worcester, Mass., has opened a new district service building at 1306 East Fifty-fifth street, Cleveland. It is two stories, 100 x 140 feet, modeled after other Norton buildings. It contains store rooms, offices, a truing room and service department. Overnight service within transportation limits will be afforded. The personnel will not be altered, except for additions to keep pace with business. The Cleveland Tool & Supply Co., 1427 West Sixth street, will continue as agent.

* * *

C.J. TAGLIABUE MFG. CO., Brooklyn, N. Y., will open a branch pant at 417 Lake street, Shreveport, La., to serve Texas, Oklahoma, Kansas, Missouri, Arkansas, Mississippi, Tennessee, Louisiana and Alabama. The plant will be as complete as the main plant, differing only in size. Service will be given on all oil-testing instruments, industrial and laboratory thermometers, hydrometers, pressure gages and automatic temperature and pressure controllers. C. L. Huffman is district manager.

* * *

PAUL OEHMIG & CO., 1930 West Ohio street, Chicago, manufacturer of mixing and grinding machinery for paint, ink and food producers, has purchased the plant building and yard space of the American Oven & Machine Co., at California avenue and Flournoy street, Chicago. American Oven & Machine Co. recently was merged with the American Machine & Foundry Co., New York, and the Oehmig company has taken over the paint and ink roller department of the seller and incorporated it in its own lines.

* * *

SCOVILLE MFG. CO., Waterbury, Conn., has acquired the entire capital stock of A. Schrader's Sons Inc., Brooklyn, N. Y. The company manufactures tire gages, valves and tire tools.

* * *

SULLIVAN MACHINERY CO., Chicago, has established a branch office at Johannesburg, South Africa, under the style of Sullivan Machinery Co. Africa Ltd., Geneva House, Johannesburg, Transvaal. Charles C. Smith, formerly of the Sullivan staff, is manager of the new office. Barlow's Johannesburg Ltd. and Thomas Barlow & Sons Ltd., Durban, Natal, continue as agents in their respective territories. A branch office, warehouse

and service station, particularly for diamond core drills, has been opened at N'Dola, Northern Rhodesia.

* * *

MONTPELIER FOUNDRY & MACHINE CO. plant at Montpelier, Ind., has been sold to W. C. Spurgeon, Muncie, Ind. It is proposed to operate the plant to produce castings for companies at Muncie in which Mr. Spurgeon is interested.

* * *

SURFACE COMBUSTION CO., Toledo, O., manufacturer of industrial furnaces and burner equipment, has been given an order for two additional continuous sheet pack furnaces for the Central Alloy Steel Corp., Canton, O. They are of the recently developed walking beam type.

* * *

SOUTHWESTERN GAS & ELECTRIC CO., Shreveport, La., has announced plans for expenditure of $4,000,000 during 1930 for improvements and extensions to its transmission and distribution system in Louisiana, Arkansas, Texas and Mississippi. A. Lieberman is president.

* * *

NILES TOOL WORKS, Hamilton, O., has made several changes in its sale arrangements, dating from Jan. 1. Direct sales offices will be maintained as follows: 1853 Chicago Daily News building, Chicago; 227 Curtis building, Detroit; 454 New York Central building, New York; 1723 Grant building, Pittsburgh. The Chicago office will be in charge of A. C. Wais as western manager, assisted by F. T. McDonough and W. R. Mullinix. This office will direct sales in St. Louis territory. B. A. Donahue continues in charge of the office in that city. G. R. Shields will have charge of Detroit territory. P. C. McBeth will continue in charge of the Pittsburgh office, assisted by L. McConnell. This office will direct sales in the Cleveland district, C. A. Tankred, 418 Schofield building, in charge. D. S. Woods is eastern manager at New York, assisted by S. M. Matchett and J. A. Ross, the latter handling the Philadelphia office at 917 Widener building. Cincinnati will be covered from the main office at Hamilton with A. T. Kuehner in charge of general railroad sales.

The following sales agents have been appointed: C. F. Bulotti Machinery Co., 829 Folsom street, San Francisco; Hallidie Machinery Co., 2242 First avenue south, Seattle; D. S. Mair Machinery Corp., 505 Esperson building, Houston, Tex., and 4521 Edmondson avenue, Dallas, Tex.; Pratt & Whitney Co., L. A. Quinn, Birmingham, Ala.

## Men of Industry

(*Continued from Page* 66)

High Bridge, N. J., plant of the Taylor-Wharton company, now is western sales manager for it and associated companies, with headquarters at San Francisco.

J. R. Van Rensselaer, formerly sales representative for Taylor-Wharton company's San Francisco distributor, now is located at the New York office of William Wharton Jr. & Co. Inc.

* * *

T. S. Clingan, for several years vice president, Pacific Coast Steel Co.,

T. S. CLINGAN

in charge of its Seattle plant, on Jan. 1 became vice president in charge of operations of all Pacific coast plants, with headquarters at San Francisco. This announcement was made by officials of the Bethlehem Steel Corp., recent purchaser of the Pacific Coast Steel Co., which is to be reorganized as the Pacific Steel Corp. to handle all Bethlehem corporation activities on the west coast. Additional changes in personnel at Seattle and San Francisco will be announced in early January.

Mr. Clingan has been engaged in the steel business for more than 30 years. His early training and connection were with the Republic Iron & Steel Co. He occupied increasingly important positions until he located in Seattle in 1909. He became identified with the Pacific Coast Steel Co. in 1911.

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George A. Hughes, president of the Edison Electric Appliance Co. Inc., Chicago, has been elected president of the Electric Association of Chicago.

* * *

John R. Gordon, New York, formerly in charge of the marine department of Union Sulphur Co., New York, has been elected by the shipping board to be president of its Emergency Fleet corporation.

* * *

George C. Kalbfleisch has resigned as general manager of the Standard Sanitary Mfg. Co., Tiffin, O. He has been affiliated with the pottery and sanitary ware industry in that section for 30 years.

* * *

W. W. MacMillen, purchasing agent of the National Malleable & Steel Castings Co., Cleveland, has been named chairman of the iron and steel committee of the National Association of Purchasing Agents.

* * *

Alexander F. Jenkins, of the Alexander Milburn Co., Baltimore, has returned after an extended tour in Europe and the Near East. He visited England, Italy, Egypt and Palestine, a considerable part of the time being spent in a cruise up the Nile.

* * *

H. E. Yeager recently became affiliated with the Philadelphia sales office of Joseph T. Ryerson & Son Inc., Chicago. He formerly was Philadelphia district manager for the Donner Steel Co. Inc., Buffalo, in charge of pig iron sales, but for the past year had been on the Donner company's steel sales staff at Buffalo.

* * *

James P. Dovel, who as noted on page 72 of IRON TRADE REVIEW of Jan. 2 resigned as vice president and manager of furnaces for the Sloss-Sheffield Steel & Iron Co., Birmingham, Ala., will devote his entire attention to his blast furnace engineering and contracting business, with headquarters in the American-Traders building, Birmingham.

* * *

Harry J. Broomhall has resigned as secretary-treasurer of the Master Craft Corp., Kalamazoo, Mich., to become assistant secretary-treasurer of the General Steel Castings Corp., Eddystone, Pa. Prior to assisting in the organization of the Master Craft Corp. in 1928 he was Pacific coast representative of Remington-Rand Inc.

* * *

Norborne Berkeley has been appointed assistant to E. G. Grace, president, Bethlehem Steel Corp., South Bethlehem, Pa. Mr. Berkeley was graduated from the University of

(*Continued on Page* 74)

# Entente's Continuance Is Assured

## *Renewal of German Syndicates Settles Question—Reorganizing for Control of Export Markets—Markets Quiet*

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Jan. 7.—(*By Radio*)—A dispatch from IRON TRADE REVIEW'S correspondent at Berlin states the German steel syndicates have been renewed for ten years. As the continuance of the European steel entente was dependent on this action it is now assured. Reorganization of the syndicates is proceeding, aiming at control of export markets and prices. German iron and steel trade is dull, but renewal of the syndicates justifies a hopeful outlook. A German firm has been awarded six locomotives for delivery to South Africa.

Current iron and steel exports from Great Britain are disappointingly small, and the domestic markets are quiet. Exports of pig iron from Middlesbrough in December totaled 9385 tons, compared with 14,128 tons in November and 16,877 tons in October. Demand for hematite is fair and prices are firm. In the Midland pig iron prices are strong and will be revised at the end of this month. The market for Staffordshire wrought iron is good. Middlesbrough steelworks are well booked. Structural engineering shops need orders. Twin plate makers are hopeful, though shipments are at a fair rate. The market for galvanized sheets continues in a depressed condition.

Belgian and French markets are featureless.

# British Steel Users Covered Before Advance

BIRMINGHAM, Eng., Dec. 20.—(*European Staff Service*)—A meeting of the Steel association was held in London Wednesday when it was decided to advance prices as follows: 5s ($1.22) on sections, 7s 6d ($1.83) on joists, while plates cost 2s 6d ($0.61) more in all districts except the Midlands and South Wales. Consumers, it is believed, had an idea of what was going to happen and covered requirements accordingly. The advances have not come without warning for meetings have been held on several occasions within the last few months and it was known that a strong body of the manufacturers was in favor of increasing steel in view of the increased cost of production due to dearer pig iron and coke.

**Sterling $4.88**

There was little buying on the Birmingham exchange yesterday. On the northeast coast steelworks are doing a heavier trade with shipbuilders. Sir Arthur Dorman, speaking at the annual meeting of Dorman, Long & Co. this week, said as regards 1930 a good start in steel had been made.

In the Midlands there is strong pressure upon furnaces for foundry pig iron. Delivery against contracts is heavy although new booking is light. Northamptonshire makers complain strongly of the difficulty of securing an adequate supply of coke. Price is stronger this week at 18s 6d ($4.52) ovens, and deliveries against contracts are much in arrears. East coast hematite makers are making a firm stand and are taking substantial contracts for the first quarter at enhanced prices. They are meeting some competition from the Continent but it is not suffi-

# Current Iron and Steel Prices of Europe

| Dollars at Rates of Exchange, January 6 | *British* Gross Tons U. K. Ports | | *French* Metric Tons Channel Ports | | *Belgium and Luxemburg* Metric Tons Channel Ports | | *German* Metric Tons Rotterdam or North Sea Port | |
|---|---|---|---|---|---|---|---|---|
| **Export Prices f. o. b. Ship at Port of Dispatch—By Cable** | | | | | | | | |
| **PIG IRON** | | £ s d | | £ s d | | £ s d | | £ s d |
| Foundry No. 3, Silicon 2.50-3.00 | $17.69 | 3 12 6* | $16.59 | 3 8 0 | $16.59 | 3 8 0 | $17.56 | 3 12 0 |
| Basic-Bessemer | 16.71 | 3 19 0† | 16.59 | 3 8 0 | 16.59 | 3 8 0 | 16.58 | 3 9 0 |
| Hematite, Phosphorus 0.02-0.05 | 19.28 | 3 19 0 | 24.76 | 6 3 0* | ..... | ..... | 17.81 | 3 13 0 |
| **SEMIFINISHED STEEL** | | | | | | | | |
| Billets | $30.50 | 6 5 0 | $22.20 | 4 11 0 | $22.20 | 4 11 0 | $22.45 | 4 12 0 |
| Wire rods | 41.48 | 8 10 0 | 31.11 | 6 7 6 | 31.11 | 6 7 6 | 30.50 | 6 5 0 |
| **FINISHED STEEL** | | | | | | | | |
| Standard rails | $40.26 | 8 5 0 | $31.72 | 6 10 0 | $31.72 | 6 10 0 | $31.72 | 6 10 0 |
| Merchant bars | 1.74c | 8 0 0 | 1.16c | 5 5 0 | 1.16c | 5 5 0 | 1.16c | 5 5 6 |
| Structural shapes | 1.61c | 7 7 6 | 1.09c | 4 19 3 | 1.09c | 4 19 3 | 1.09c | 4 19 9 |
| Plates, ship, bridge and tank | 1.77c | 8 2 6 | 1.36c | 6 4 0 | 1.36c | 6 4 0 | 1.36c | 6 4 0 |
| Sheets, black, 24 gage | 2.18c | 10 0 0 | 2.34c | 10 12 6 | 2.34c | 10 12 6 | 2.33c | 10 12 0 |
| Sheets, galvanized, 24 gage, corrugated | 2.73c | 12 10 0 | 2.87c | 13 1 3 | 2.87c | 13 1 3 | 2.97c | 13 10 0 |
| Bands and strips | 2.18c | 10 0 0 | 1.24c | 5 12 6 | 1.24c | 5 12 6 | 1.24c | 5 12 6 |
| Plain wire, base | 2.07c | 9 10 0 | 1.54c | 7 0 0 | 1.54c | 7 0 0 | 1.73c | 7 17 0 |
| Galvanized wire, base | 3.05c | 14 0 0 | 1.77c | 8 1 0 | 1.77c | 8 1 0 | 1.98c | 9 0 0 |
| Wire nails, base | 2.40c | 11 0 0 | 1.54c | 7 0 0 | 1.54c | 7 0 0 | 1.71c | 7 15 0 |
| Tin plate, base box 108 pounds | $ 4.58 | 0 18 9 | ..... | ..... | ..... | ..... | $ 9.02 | 1 17 0 |

*Francs

| **Domestic Prices at Works or Furnace—Last Reported** | | | Francs | | Francs | | Marks | |
|---|---|---|---|---|---|---|---|---|
| Foundry No. 3 Pig Iron, Silicon 2.50—3.00 | $17.69 | 3 12 6 | $18.66 | 475(2) | $17.11 | 620 | $20.29 | 85 |
| Basic pig iron | 16.71 | 3 8 6 | 20.04 | 510(1) | 16.01 | 580 | 21.72 | 91 |
| Furnace coke | 4.39 | 0 18 0 | 6.60 | 168 | 5.80 | 210 | 5.13 | 21.50 |
| Billets | 30.50 | 6 5 0 | 24.37 | 620 | 24.56 | 890 | 28.88 | 121 |
| Standard rails | 1.80c | 8 5 0 | 1.46c | 810 | 1.50c | 1,250 | 1.53c | 140 |
| Merchant bars | 1.77c | 8 2 6 | 1.31c | 730 | 1.12c | 930 | 1.54c | 141 |
| Shapes | 1.77c | 8 2 6 | 1.26c | 700 | 1.12c | 930 | 1.50c | 138 |
| Plates, ship, bridge and tank | 1.93c | 8 17 6‡ | 1.46c | 810 | 1.35c | 1,125 | 1.72c | 158 |
| Sheets, black, 24-gage | 2.29c | 10 10 0 | 2.79c | 1,550 | 2.22c | 1,850 | 2.45c | 225 |
| Sheets, galvanized 24 gage, corrugated | 2.73c | 12 10 0 | 3.55c | 1,970 | 2.88c | 2,400 | 3.81c | 350 |
| Plain wire | 2.07c | 9 10 0 | 2.02c | 1,100 | 1.98c | 1,650 | 2.45c | 225 |
| Bands and Strips | 2.18c | 10 0 0 | 1.44c | 800 | 1.35c | 1,125 | 1.79c | 164 |

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 18s 0d ($4.39) f. o. b. Ferromanganese £21 13s 0d ($105.65) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

cient to affect the market to any extent. Owing to closing of steelworks on the northeast coast some pig iron will inevitably go into stock but makers have no doubt demand after Christmas will be sufficient to absorb any surplus. Continental firms are sending pig iron to South Wales, the northeast coast and Scotland although heavy charges for transport to the Midlands keeps Northampton and Derbyshire furnacemen comparatively free from competition. These districts, however, formerly took supplies from the Midlands and foreign competition has the reactionary effect of leaving more iron for delivery in the Midlands. There is little demand for forge material from Northamptonshire furnaces.

Scottish pig iron producers have followed the lead of other British makers and this week are quoting £3 18s ($19.02) for No. 3, a rise of 2s ($0.48) on the week. Steelworks in the Glasgow area have also advanced prices in accordance with the decision of the Heavy Steel association Wednesday.

In contrast to the strength of the British markets Continental prices are weak although efforts are being made by the cartel to fix minimum rates for billets, joists and plates in addition to the fixing of bars arranged a week ago. Works are now quoting a minimum of £4 12s ($22.44) f.o.b. Antwerp for 2-inch billets although the market is so weak that it is doubtful whether this move will meet much success. Birmingham merchants have booked little new business this week. Rerollers are quiet and not in need of billets while galvanized sheet makers in the present depression have no need to lay in stocks of sheet bars. The principal purchases are mainly small bars for nut and boltmaking, strip for tubes and motor cycle works.

Makers of finished iron in South Staffordshire will not have much business to carry over into the New Year except those who are producing marked bars. Some orders for chains and cables are being placed as a result of increased prosperity at shipbuilding yards.

South Wales works are short of trade and complain of foreign competition in steel. The rise of heavy materials will widen the gap between British and Continental prices but as many users are pledged under the rebate scheme to use British steel only the advance will make little difference to English steelworks activity. Continental competition is confined to lighter forms of steel.

Prospects of the tin plate trade in South Wales have improved and a firm tone now exists among makers. With the exception of merchants who have secondhands to dispose of, prices are steady at 18s 9d ($4.58) per box.

# Large German Producers Absorb Output of Smaller Steelmakers

BERLIN, Dec. 20.—(*European Staff Service*)—Interest in the German iron and steel market is concentrated on negotiations now taking place for the prolongation of the domestic associations. The decision thereon will have to be taken today but it is hardly doubted that the expected agreement will be reached. It is believed the prolongation this time will be for a period of ten years, which means that the suggested inhibition of construction of new steel plants will not be accepted, being unnecessary. The renewal of the European syndicates, and especially the establishment of export associations, was greatly welcomed by German producers. One of the principal difficulties in the domestic negotiations, that concerning quotas, seems now to have been overcome by leading combines buying the quotas of the small and medium-sized producers. Thus the absorption of the Doehlen Cast Iron Co., the Rhenish-Westphalian Steel and Rolling Works Co., and the Becker Co. by the United Steel Works Co., or the Central German Steel Works Co., or the Stahlwerksverband, is expected to be realized shortly, nothwithstanding all denials.

This combine would mean a further step toward concentration in the German iron and steel industry. It is interesting to state that, apart from the products included in the previous syndicates, sheets and pipes are expected to become syndicated through the German raw steel association. The dealing side of the iron and steel business is to be reorganized at the same time.

About 72 per cent of the members of the Ruhr coal syndicate have established a new company named Ruhr-Montanindustrie Co., with capital of 12,000,000 marks, which is to undertake various tasks on joint account for the Ruhr coal industry.

The situation on the domestic iron and steel market has remained slack, and deliveries to consumers have been further reduced. In October only 337,000 metric tons of A-products were shipped, compared with 371,000 tons in September, of which 125,000 and 130,000 tons, respectively, were exported. Unfilled orders keep the works occupied at an average rate of only two to three weeks, and producers' stocks already are accumulating, those of the United Steel Works Co. now being estimated at about 25,000 tons, those of Krupp about 11,000 tons, and those of the Hasper Iron Works about 4000 tons. Consumers are most reluctant, partly on account of the unsettled economic conditions and the shortage of funds in Germany. It is hoped that in the spring purchases will revive, although much will depend on the question whether municipalities will have sufficient funds available, which at present seems rather doubtful. Shipments of semi-finished products have decreased, both at home and abroad. Merchant bars also have been sold in reduced quantities, negotiations for prolongation of the associations being an additional handicap. The position of bands is rather weak. Thin sheets have made a better showing on the rumor that this product would eventually be syndicated.

# Entente To Divide Export Orders; Classifying Buyers Is Difficult

BRUSSELS, Dec. 20.—(*European Staff Service*)—The topic of the past fortnight has been the meetings of the European steel entente. Following the decisions taken at Liege, the committee held a meeting at Charleroi Dec. 9 to examine how it would be possible to apply those decisions, and to transform into precise instructions the general directions that have been elaborated. It is not sufficient to establish a basis price and it is indispensable to determine the extras for the various samples. Furthermore, the Liege meeting fixed a price for merchants and exporters, and another price for consumers; consequently, it was important to give a definition of the two classes of customers.

The foregoing were questions submitted to the Charleroi meeting. Extras were fixed for beams, semifinished products and merchant bars, but it was impossible to solve the second question.

Another meeting was held at Dusseldorf Dec. 14 at which the members examined the situation of the market and decided to transfer some tonnage from the works well provided to the works that have only a few orders. The committee accepted to establish an organization which will divide the export orders taken by the various groups. This organization will commence operations Jan. 1, according to the rules indicated at Dusseldorf.

The Belgian iron and steel market remains as quiet as previously, and practically no business is transacted. The prices quoted are those fixed by the entente, and up to now it has not been reported that rebates have been granted. It was said that the German group offered to transfer to the Belgian group a certain tonnage of orders, in conformity with the Dusseldorf agreement.

Prices are as follows: 6-inch blooms, £4 3s ($20.12); 4-inch blooms, £4 10s ($21.82); billets of 2½ inches and over, £4 11s ($22.06); 2-inch and 2¼-inch billets, £4 12s ($22.31). Sheet bars are sold at £4 11s ($22.06) for samples weighing less than 20 pounds per foot, and £4 13s ($22.55) for those weighing less than 13 pounds per foot. Bars are quoted at £5 5s ($25.46). Plates 3/16-inch thick are worth £6 6s 6d ($30.67), and 3-millimeter plates £6 14s ($32.49). Normal-section beams are quoted at £4 17s ($23.52), and British sections at £5 1s ($24.49).

# Obituaries

WILSON MILES DAY, 79, who prior to 1887 was editor of *The Trade Review and Western Machinist*, predecessor of *The Iron Trade Review and Western Machinist*, which in 1888 became IRON TRADE REVIEW, died Dec. 23 at Santa Cruz, Calif., after a short illness from heart trouble. He was born in Clarion, Pa., Nov. 5, 1850, and was graduated from Ohio Wesleyan university in 1871. He located in Akron, O., and later became city editor and subsequent associate editor of the *Akron Daily Beacon*. His next position was on the staff of the *Cleveland Leader*. In 1895 he was president of the Cleveland chamber of commerce.

* * *

Victor M. Johnson, for 25 years general manager of the Free Sewing Machine Co., Rockford, Ill., died recently in that city.

* * *

Charles A. Hurff, 56, vice president and treasurer of the Philadelphia & Reading Coal & Iron Co., died at Philadelphia Dec. 28. He had been connected with the company for 37 years.

* * *

William D. Grant, manager of the Christiana Machine Co., Coatesville, Pa., died Dec. 19 in that city of injuries sustained in an automobile accident.

* * *

William H. Binder, 61, president of the Indiana Ornamental Iron & Wire Works, Indianapolis, died Dec. 14. He was born in Cleveland but had been a resident of Indianapolis for 26 years.

* * *

S. M. Neville, president and treasurer of the Leese-Neville Corp., Cleveland, manufacturer of electrical equipment, died unexpectedly Dec. 28 at a golf course near his winter home in Fernandina, Fla. Burial was at Massillon, O.

* * *

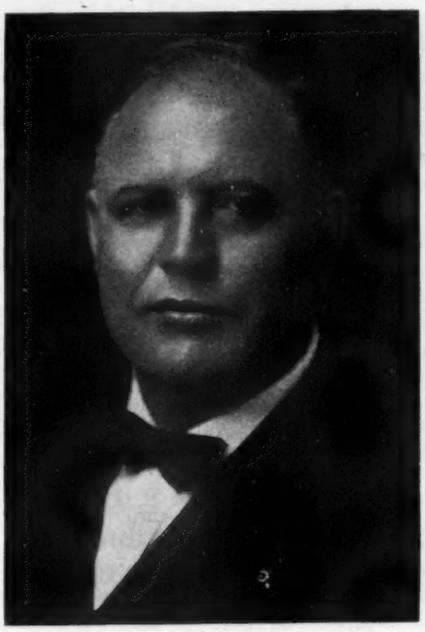
Clifford M. Diehl, traveling auditor of the Youngstown Sheet & Tube Co., Youngstown, O., died unexpectedly of a heart attack on a train Dec. 28 en route from Zanesville, O., to Youngstown. Prior to 1923 he was auditor of Steel & Tubes Inc.

* * *

Oramel W. Pierce, a manufacturer of Olean, N. Y., and founder of the Roofing & Metal Works Co., that city, died at his home there Dec. 29. Mr. Pierce was president of the Delavan-Pierce Corp., and the Delavan & Machias Water Supply Co.

* * *

Harry Edward Packer, assistant superintendent, Springfield, Mass., plant of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., died Nov. 25, at his home in Springfield after a brief illness. He was born in Noank, Conn., Dec. 11, 1880, and had resided in Springfield for the past 19 years.



H. B. WEBSTER

Dallas, Tex., branch office manager, Pittsburgh Steel Co., who died Dec. 19, as noted in IRON TRADE REVIEW, Dec. 26, 1929

* * *

Edward McSherry, 68, former foundry manager and part owner of the Freidag Mfg. Co., Freeport, Ill., who retired in 1922, died Nov. 28. After early training in the foundry he became superintendent in 1891 of the Rockford Foundry Co. Later he bought and conducted the business as McSherry & Watson until dissolution of the partnership, whereupon he became assistant foundry superintendent of Emerson-Brantingham Co., resigning in 1889 to become general superintendent of the Stove Gas Engine Works, Freeport, now the Stover Mfg. & Engine Co. He built its foundry and remained in its employ 22 years. He then retired from active service but became financially interested in the Freidag Mfg. Co. and served as foundry manager.

* * *

Warren E. Mumford, metallurgist, Malleable Iron Fittings Co., Branford, Conn., died at his home in that city Nov. 15. He was graduated from Worcester Polytechnic institute in 1890 and in the same year entered the employ of the American Steel Car Wheel Co. as chemist and metallurgist. He spent most of the following 20 years in Muskegon, Mich., Dunkirk, Ind., York and Berwick, Pa., Akron, O., and St. Louis. In 1913 he entered the employ of the Malleable Iron Fittings Co., where he remained until his recent death.

* * *

Asael E. Adams, 64, director and member of the executive committee, Youngstown Sheet & Tube Co., Youngstown, O., died Jan. 2 after a week's illness with pneumonia. Mr. Adams had been connected with the Dollar Savings & Trust Co., Youngstown, for 34 years and had been president since 1902. He also had been head of the First National bank, Youngstown, since 1907. He was a director of the Youngstown Steel Car Co., Youngstown Foundry & Machine Co., Federal Holding Co., Youngstown Dry Goods Co. and many other companies. Mr. Adams was born in Cleveland Oct. 25, 1866, was a student at Case school of applied science when 17 and his first job was as draftsman. In 1893 he located in Youngstown as secretary of the Mahoning Abstract Co.

* * *

Wilfred Lewis, 75, president of the Tabor Mfg. Co., Philadelphia, until a year ago, and noted engineer, died of apoplexy at sea off Egypt while on a world cruise with his wife, according to word received by relatives in Philadelphia. Mr. Lewis was noted especially for perfecting a molding machine for making castings. In 1927 he was awarded a gold medal by the American Society of Mechanical Engineers for his engineering accomplishments, more particularly in design and cutting of gear teeth. During the war period, he served in Washington in an advisory capacity and

aided in the development of armored tanks.

Mr. Lewis, who had taken out more than 50 patents, was graduated from the Massachusetts Institute of Technology in 1875 and joined the Wm. Sellers & Co., Philadelphia. In 1900 he became president of the Tabor Mfg. Co. From 1901 to 1903 Mr. Lewis was vice president of the American Society of Mechanical Engineers, and in 1912 he was chairman of the arts and sciences committee of Franklin institute of his home city. He was a member of the Engineers clubs of New York and Philadelphia.

* * *

Louis Brennan, 51, president of the Victor Brass Mfg. Co., Cleveland, died Jan. 2, following a brief illness.

* * *

Albert J. Weatherhead, 70, founder of the Cleveland Faucet Co., Cleveland, and identified with many Cleveland manufacturers in the last 50 years, died Jan. 5 of heart disease.

* * *

Archer A. Landon, 60, president of the Landon Radiator Co., Buffalo, died Jan. 5 in a Buffalo hospital after an illness of several weeks. He formerly was vice president of the American Radiator Co. and general manager of its plants but resigned in 1925, and in 1926 organized the company which he headed at the time of his death. He was labor advisor to President Wilson during the World war.

* * *

Benjamin S. Story, 36, formerly connected with Pickands, Mather & Co., Cleveland, and since Sept. 1, 1929, as sales agent with Butler Bros., Union Trust building, Cleveland, iron ore dealers, mine owners and operators, died Jan. 4 at his home in Cleveland Heights, O., from pneumonia. He was a graduate of University school and of Sheffield Scientific school, Yale university.

* * *

Henry H. Brigham, 63, president of the North American Car Co., Chicago, died unexpectedly Jan. 4 in New York. He founded the company in 1907. Mr. Brigham was born in Sharon, Wis., and began his career as telegraph operator for the Chicago & North Western railroad. He later was connected with the transportation department, Armour & Co., and was freight agent for the Nickel Plate at Chicago before going into business for himself.

## Republic Sets Record

Birmingham, Ala., Jan. 7.—Republic Iron & Steel Co. broke records in December with its two blast furnace stacks, No. 1 making 14,535 tons of pig iron and No. 2 stack 14,965 tons.

## Men of Industry

(*Concluded from Page* 70)

Virginia in 1916 and entered the law offices of Cravath & Henderson, New York. During the war he served in the United States army, being discharged in 1919 with the rank of major of field artillery. He then became identified with the Bethlehem organization and in 1922 was elected assistant secretary.

* * *

S. Clarke Reed has resigned as vice president of the Oil Well Supply Co., Pittsburgh.

* * *

Frank G. Morris, for years general superintendent of coal mines of the Republic Iron & Steel Co., Birmingham, Ala., has resigned. The work will be looked after by the general superintendent, C. L. Bransford, and his assistant, J. G. Walsh.

* * *

Edwin P. Corey, for several years in charge of wrought pipe sales for the Youngstown Sheet & Tube Co., Youngstown, O., has been appointed general manager of sales. Prior to becoming affiliated with the Youngstown company he was in the sales department of the National Tube Co., Pittsburgh.

* * *

William R. Beck, associated for the past few years with several representative companies in charge of engineering, metallurgical and sales departments, has become associated as sales engineer with the Fort Pitt Steel Casting Co., McKeesport, Pa., manufacturer of carbon and alloy steel castings by the electric furnace process. Mr. Beck is a graduate of Case School of Applied Science, Cleveland. His experience includes engineering and iron foundry practice.

* * *

Arthur M. Long, for three years assistant general manager of sales at Chicago, in charge of the tin plate department, Youngstown Sheet & Tube Co., Youngstown, O., now has charge also of the company's western bar sales. The company will shortly operate its western bar mills at Indiana Harbor, Ind. Mr. Long formerly was with the sales department of Trumbull Steel Co., but since the Youngstown company established its Chicago office, he has been in charge of tin plate sales.

* * *

John E. Wetzel, associated with the Superior Steel Corp., Pittsburgh, for the past 14 years as eastern sales manager with headquarters in Philadelphia, has been appointed general sales manager of that company. Mr. Wetzel began his career in the iron and steel industry in 1903 as superintendent of the Longmead Iron Co., Coshocton, Pa. Eight years later he joined the Sweet's Steel Co., Williamsport, Pa., as assistant to the president in charge of sales and operations. He later joined Henry Disston & Sons Inc., being located at Chicago. In 1915 Mr. Wetzel became connected with the Superior company.

## Mergers Revive Interest in Vessel Control

(*Concluded from Page* 67)

years ago it had a fleet of 96 vessels, with a trip capacity of 792,500 tons. Its fleet today has 12 fewer vessels, but the trip capacity has been reduced only 55,700 tons. Dividing this loss, 55,700 tons, by 12 we have 4641 tons, the average capacity of those ships which have been dropped. This indicates how the fleet is being built up with larger vessels, though diminishing in number of units. The fleet six years ago included 20 barges; today the number is 14.

The Interlake Steamship Co. recently took over four steamers from H. H. Brown & Co., bringing the total number in its fleet up to 49. The combined trip capacity of the four boats is 37,800 tons, and this brings Interlake's trip capacity to 417,800 tons.

The Hanna company dropped two boats, the steamer H. F. BLACK, which went to Donner, and the steamer CARMI THOMPSON, taken over by Butler Bros., iron mine operators. The Hanna fleet now comprises ten boats, with a trip capacity of 93,500 tons.

The Cleveland-Cliffs Iron Co. dropped one boat, the LEWISTON, 2600 tons capacity. Its fleet now numbers 20 vessels, with a combined trip capacity of 155,700 tons.

In other respects the Great Lakes fleet of American ore, coal and grain carriers was unchanged in 1929. At the beginning of the season it included 337 steamers and barges, with a total trip capacity of 2,793,100 tons. Today it has 335, with 2,805,400 tons trip capacity.

To sum up: Pittsburgh, Interlake, Hanna, Cleveland-Cliffs have 163 vessels. Bethlehem Steel Corp. has 13. Total, 176. All other interests—there are 23—have a total of 159. To merge, or not to merge, is the question.

# Machinery

**Sales and Inquiry Hold Steady with Buying Well Spread—Farm Equipment Builders Have Full Schedules—Prices Steady**

STEADY sales and encouraging inquiry characterize the opening week of 1930 machinery trade. Buying appears to be well spread with the exception of the airplane engine industry. Prices in general hold to former levels. Interest is high in the New York automobile show this week, the trend toward 8-cylinder cars impressing builders of grinding machinery as an outlet for much new equipment. International Harvester Co., Oliver Farm Equipment Co. and Monarch Tractor Co. have sizeable equipment programs in prospect. Railroads, except for the Erie which has a list out for its Hornell shops, are not particularly active at present but they are expected to be in the market later in the quarter. Deliveries are improved considerably in the East.

**New York, Jan. 7.**—Machine tool demand shows little change. Inquiry holds well, but action on considerable pending business is not expected until later in the month. Buying has slumped under last year. Delivery has improved and some builders now report standard tools in stock. Prices are unchanged. Buying is well spread, covering a wide range of industries, although the airplane engine industry has dropped to a low point. Grinding machinery shows a slight improvement and export buying for this equipment holds well. Railroads are expected to do some buying early in the quarter. The Erie has a list out for its Hornell shops. Technical schools in Brooklyn are closing this week on a list of tools.

**Worcester, Mass., Jan. 7.**—The New York automobile show is the center of attraction for machinery builders this week. Makers of grinders especially are studying the trend from 6 to 8-cylinder cars to be ready for the new machinery which a general revision of that kind will require. Manufacturers are still building machines ordered in 1929. Lathes and drills report spotty demand and other lines are quiet.

**Pittsburgh, Jan. 7.**—Activity in the machine tool market is regarded as normal for this period although large items are lacking both in awards and in inquiry. Little activity is noted on the part of railroads. Heavy machinery builders continue well engaged and have substantial backlogs although new business has been light during recent weeks.

**Cleveland, Jan. 9.**—Although trading is slack an excellent tone exists to the market. Dealers in some cases note an influx of factory men asking for equipment to carry out impovement and modernization programs. After two years of record sales machinery interests feel they can afford to weather a little slackening and get caught up on odds and ends of their business. The case is cited of a buyer who recently inquired for used machines and finally closed on one machine of this type, saving 50 per cent on the quotation of a new machine. A builder of turret lathes reports plant operations at 100 per cent but with the night shift off. The prediction is heard that by March 15 the machinery business will be up to early fall levels.

**Chicago, Jan. 7.**—Machine tool inquiries are encouraging, and sales are steady, holding to the volume of December. Most houses report December business was equivalent to or slightly ahead of the preceding month, and expect to see further gains this month. International Harvester Co., Oliver Farm Equipment Co., and Monarch Tractor Co. are among the implement and tractor works with important equipment programs ahead. Inquiries from general manufacturing lines in the Chicago district comprise largely single-item prospects, but virtually all dealers in the district are working on a number of these inquiries that have carried over from November and December. Most of the western machine tool builders have backlogs of at least 30 days at present operations. The 10 per cent advance in the prices of shapers is scheduled to go into effect next week.

## November Sees Slump in Foundry Equipment

Cleveland, Jan. 7.—Orders for foundry equipment in November decreased perceptibly from October, according to the Foundry Equipment Manufacturers' association, and were the lowest of any month in over a year. Orders also were lower than for November of last year. November shipments were 152.2, with unfilled orders 445.4. Taking the average of 1922-24 as 100, gross orders for three months were 230.3. Monthly comparisons follow:

| | 1926 | 1927 | 1928 | 1929 |
|---|---|---|---|---|
| Jan. | 168.2 | 180.4 | 132.7 | 180.5 |
| Feb. | 154.9 | 198.0 | 123.6 | 197.0 |
| Mar. | 157.3 | 131.1 | 138.6 | 209.4 |
| Apr. | 113.2 | 130.1 | 107.7 | 172.6 |
| May | 128.5 | 134.8 | 325.6 | 177.7 |
| June | 133.5 | 138.4 | 149.1 | 177.3 |
| July | 127.3 | 89.9 | 94.8 | 218.6 |
| Aug. | 141.2 | 106.4 | 278.0 | 229.5 |
| Sept. | 114.0 | 80.4 | 170.0 | 216.3 |
| Oct. | 140.5 | 98.0 | 185.0 | 240.3 |
| Nov. | 133.4 | 95.8 | 197.8 | 128.6 |
| Dec. | 181.0 | 106.8 | 166.5 | ..... |

Base: Average monthly shipments for 1922-23-24.

## Lamson & Sessions Buys Foster Bolt & Nut

Cleveland, Jan. 7.—The Foster Bolt & Nut Mfg. Co. has been purchased by the Lamson & Sessions Co., which in 1929 took over the Lake Erie Bolt & Nut Co., Cleveland, and through it the American Bolt Co., Birmingham, Ala. This transaction makes the Lamson & Sessions Co. the second largest manufacturer of bolts and nuts in the United States, combined sales of the companies last year having approximated $12,000,000 and net earnings being equivalent to $4 a share on the 278,000 shares of common stock to be presently outstanding.

The Foster company was organized in 1909 by A. M. Foster, of Cleveland, and O. E. Foster, of Buffalo. In 1926 the company built a plant in Chicago. The Lamson & Sessions Co. was founded as a partnership in 1865 at Mt. Carmel, Conn., and was moved to Cleveland in 1869. In 1921 the Lamson & Sessions Co. purchased the Falls Rivet Co., Kent, O., and in 1926 the Kirk-Latty Mfg. Co., Cleveland.

J. F. Donahue, president of the Foster company, becomes vice president, a director and member of the executive committee of the Lamson & Sessions Co. He will have charge of western operations. A. M. Foster, Cleveland, and H. O. Smith, Buffalo, will become directors, serving with J. G. Jennings, chairman of the board, George F. Case, president, and N. J. Clarke, vice president and chairman of the executive committee.

## Buys Seven Derricks

Toronto, Ont., Jan. 7.—Dominion Bridge Co., with offices here, has been awarded contracts by the Beauharnois Power Corp. for one 50-ton and six 15-ton derricks, the price involved being approximately $35,000. The power company has placed contracts for material for a 16-mile transmission line with Canadian General Electric, Northern Electric, and Canada Wire & Cable companies. Bids have been asked for waterwheels and generators capable of producing 216,000 horsepower. This installation will be put in operation in October, 1932, at the plant of the Beauharnois interests.

## Barrel Output Falls

Cleveland, Jan. 7.—Barrels shipped by members of the Steel Barrel Manufacturers' institute, Cleveland, numbered 422,319 in November, 1929. This compares with 472,074 in October. November production of all classifications was 39.7 per cent of capacity.

## Machine Flanges Boiler and Tank Heads

(*Continued from Page* 34)

ries the center hold-down and its air cylinder, and the other the supporting spider, are made of heavy channel sections, the ends being formed of steel plates butt welded to the sections. The upper member is braced by two heavy straps running from the end to the main frame, and welded in place. The supporting spider also is of welded construction.

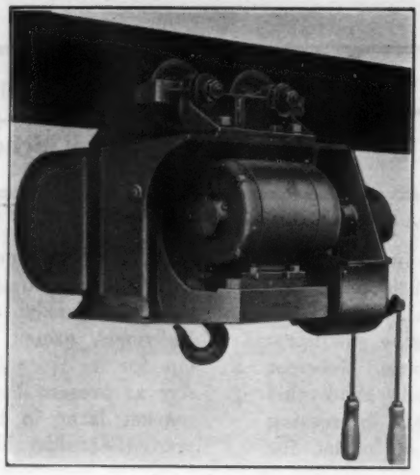
**Flange Bent Up in Forming**

The flanging mechanism is mounted in the main frame and is simple in construction. The high-speed spinning process is used, the flange being bent up instead of down. The mechanism proper consists of two working rolls and a spinning roll, the latter being the only driven roll. The two working rolls consist of an upper, 45 degree roll, and a segment or flanging roll. The former is mounted on a stub shaft on the extension of the plunger of a compressed air cylinder which serves to raise and lower it. The segment roll is mounted on a carriage which fits in curved guides on the sides of the body, which permit it to be moved so as to bring the roll face to any angle up to 90 degrees with the working face of the 45-degree roll. The spinning roll is driven by back gears from a countershaft which in turn is driven through a silent chain by a 10-horsepower motor. This motor also drives the pump which supplies hydraulic pressure for moving the segment roll. For convenience of the operator all controls are grouped at a central point.

## Electric Hoist Has Many Improved Features

No. 5

Robbins & Myers Inc., Springfield, O., through its hoist and crane division, is placing on the market a complete line of electric hoists ranging in capacity from 250 to 15,000 pounds. A cast-steel trolley is provided, adjustable to nine sizes of I-beams. An enclosed bottom block retains the rope on the sheaves and shrouds all parts so as to guide itself easily into the rope flare when swinging. Gearing is of alloy steel, heat treated to specifications which allow for the maximum strain of constantly reversing tooth loads at top motor speed. Roller bearings are incorporated in the hoist mechanism. The main frame is fabricated from a



*No. 5—Electric hoist with capacity up to* 15,000 *pounds*

new alloy developed in the foundries of the manufacturer; it is said to have a tensile strength of 35,000 pounds per square inch and present a pleasing external finish.

Two reductions of spur gearing are used, the motor pinions being hobbed directly to the motor shaft and the drum and motor gears in alloy steel heat treated rings pressed and keyed on spiders. Load on the hoist is controlled by a Weston-type load brake while a motor brake is operated mechanically from the controller.

## Trench Supporter Unit Obviates Sheathing

No. 6

Greiman Ditcher Co., Baker building, Minneapolis, is manufacturing a machine known as a trench supporter for use with any style trencher to eliminate cave-ins without sheathing or bracing the trench walls. The machine is used in underground pipe laying work. The trench supporter is lowered into the trench and travels under its own power. The pipe is laid in an apron or shoe at the rear of the supporter as fast as the trench is opened. The body of the supporter is of heavy steel plate and is lowered into a trench by power, either end independently, by means of rack and pinion. A crawler unit on the bottom of the machine, together with two expandible crawler units on the sides, furnish traction. They are driven by a heavy duty four-cylinder motor within the machine. After being lowered into the trench the sides of the machine are expanded by a handwheel device so that the side crawler units exert pressure on the trench sides.

The width of the supporter normally is 24 inches and expands to 40 inches; it may be used in any trench up to 12 feet deep and 40 inches wide. The rear apron or shoe in which the pipe is laid is made of detachable 4-foot sections to accommodate any length sewer or water pipe. Any dirt falling in front of the supporter is cleared up by a plowing device in front and raised by the trencher buckets. Speed in the trench may be regulated from 6 inches to 8 feet per minute. Out of the trench the supporter is balanced by two-wheel trucks at each end and has a road speed of 2 miles per hour.

## Improved 9-Inch Lathe Is Precision Tool

No. 7

South Bend Lathe Works, South Bend, Ind., is building a new 9-inch lathe, a back-geared screw-cutting precision tool. The principal improvement over former lathes of this type made by the company is a newly designed headstock provided with a three-step cone of 1¼-inch widths. The headstock casting is braced by improved gear guards. A new back gear shaft oiling system is provided; easier and better oiling of spindle bearings is possible and the spindle carries a new seal that is said to prevent accumulation of oil on the outside of the headstock. The gear guards together with an improved method of securing the headstock to the lathe bed insure permanence of alignment of the headstock spindle and adapt the lathe to most precision machining. In the automotive field the lathe is claimed to be especially valuable as a universal precision tool for refacing valves, reboring connecting rods, finishing pistons, making bushings and other every day service jobs. The lathe is available in several styles and sizes and with countershaft or motor drive.

## Electrode Feeding Unit Has Geared Drive

No. 8

General Electric Co., Schenectady, N. Y., announces an improved feeding device on its automatic welding head to meet advances in the art of automatic welding which call for an increased use of high welding speeds requiring heavier welding currents and larger sizes of electrode wire than heretofore. This improvement consists of the addition of a geared drive to what was formerly the idler roller in the feeding mechanism. In this way the large sizes of wire which are stiff and hard to feed without excessive pressure on the driving rolls,

are fed positively without slippage, at a regular rate and with only a moderate pressure between the driving rolls.

**Permits Use of Curved Nozzles**

This device also extends the uses for automatic welding by making it now possible to use curved nozzles to reach into otherwise inaccessible places, and to weld in abnormal positions. Such cases formerly were considered impractical due to the difficulty of conforming the heavier wires to any other shape than their natural curvature as they come from the reel. These improved drive-roll gears furnished on the welding heads for normal applications will accommodate any size wire from ⅛-inch to ¼-inch diameter without changing gears. Below ⅛-inch the gears are not needed and it is only necessary to remove one gear, that on the drive roll shaft. Sufficient pressure can be obtained for the small sizes of wire by screwing down the adjustment on the binding roll.

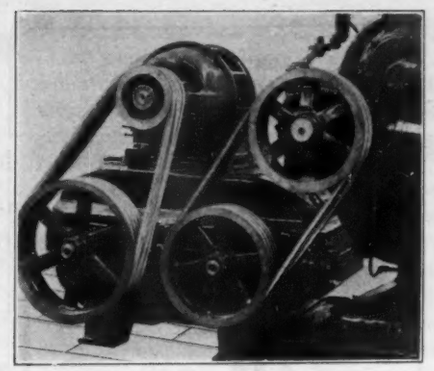
## Roll Accuracy Tested by Indicating Caliper

No. 9

Farrel-Birmingham Co. Inc., Ansonia, Conn., has developed an instrument known as the indicating caliper, for determining roll accuracy. As shown in the accompanying illustration, the device consists of a saddle with four rollers which slide along the top of the roll as the test is being made. A bracket or cross bar is mounted on this saddle, with arms extending down on either side of the roll. A movable post is provided on each of these arms; one post is in contact with the roll through a screw attached to its end. A dial micrometer furnishes contact at the other post. The entire unit is slid along the roll and any variation brought about by crown, concavity or taper is registered on the dial. The indicator will reveal a variation of anything over 0.00005 inch.

**Device Easily Manipulated**

The rolling contact eliminates friction and prevents chattering of the indicator needle. Most of the parts are of cast aluminum for ease in manipulating. The cross bar is movable along the saddle, carrying the indicator to the end of the roll without reversing the saddle. Gibs under the set screws prevent slipping of the arms or posts on the cross bar. One reading on the roll with an ordinary micrometer caliper gives a starting point for determining exact diameters with the indicating caliper. The instruments are built in five sizes suitable for rolls 20 to 50, 16 to 42, 11 to 32, 8 to 24 and 4 to 17 inches in diameter. Each size takes the largest and smallest diameter consistent with precision. When changing from one diameter to another only two parts need be moved. Each caliper is disassembled and packed in a convenient wood carrying case for shipment.



*No. 10—Variable speed transmission connected to draw-cut shaper*

## Transmission, Reversing Drive Are New Units

No. 10

Morton Mfg. Co., Muskegon Heights, Mich., announces two new drive mechanisms, a variable speed transmission and a direct-connected reversing drive unit. The former has an unlimited number of speed changes and is quiet and powerful. All speed changes may be made while the machine is in motion and the cutting speed of the machine can be changed by inches if desired. Cutting speed in feet per minute is indicated on a speed indicator within view of the operator at all times. Changes are accomplished by a handwheel. The transmission, with a Reeves-type drive unit, is shown attached to a draw-cut shaper in the accompanying illustration.

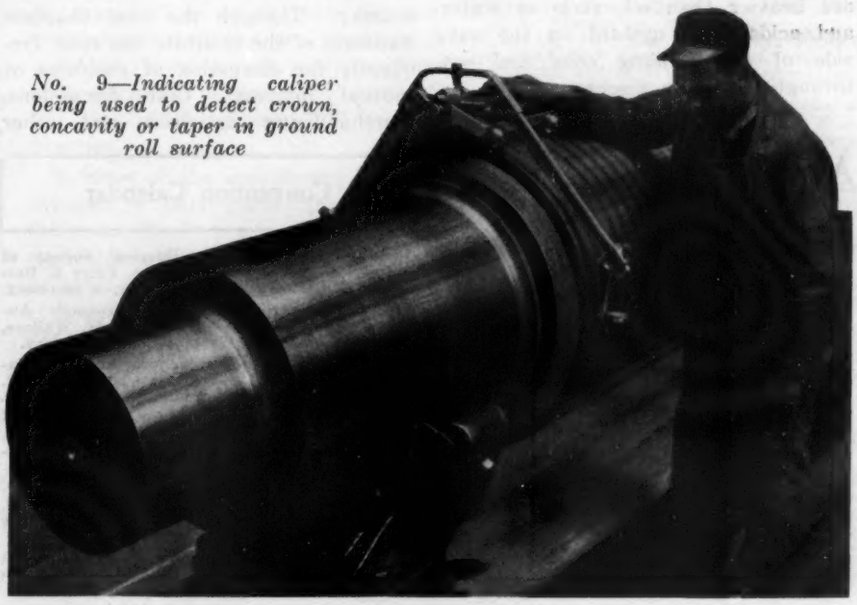
**Reversing Drive Direct Connected**

The direct connected reversing drive unit is designed for application to stationary keyway cutters which are built with 18, 24, 38 and 48-inch cutting strokes. The unit is of box-type construction with multiple-disk clutches, running in oil and so geared as to give a 2 to 1 quick return ratio. Shafts are mounted on tapered roller bearings. The reversing drive is connected direct to the machine through a flexible coupling and is quiet in operation and positive in reversal.

## Oil Purifier Is Compact, Centrifugal Type

No. 11

Hydroil Corp., Lebanon, Ind., recently has placed on the market a compact direct motor-driven centrifugal purifier for use in purifying the oil in lubricating systems and for various applications in process work. The purifier is completely enclosed, vapor-tight, nonaerating and suitable for handling lubricating, insulating, fuel or any of the volatile oils. It is equipped with so-called wet and dry pumps, with piping arrangements to suit conditions. Standard size ball bearings are used throughout and lubrication is effected by a splash system with all parts oiled from a



*No. 9—Indicating caliper being used to detect crown, concavity or taper in ground roll surface*

central reservoir. The purifier may be equipped with a heater of the electric immersion type to heat the oil to a degree where separation of impurities is obtained most economically, or it may be provided with a filter attachment consisting of a suitable number of sheets of filtering medium to remove the carbon and coloring matter.

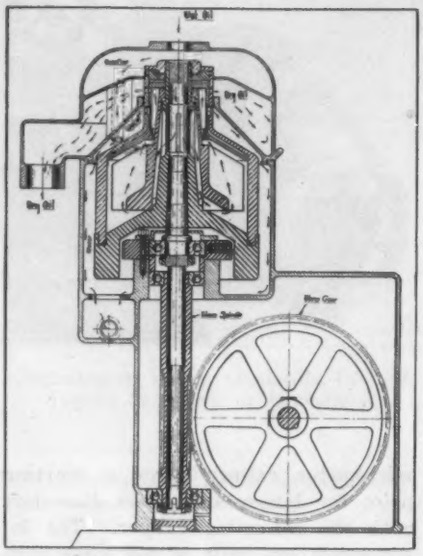
**Flow Controlled Automatically**

Among features adding to the convenience of operation are automatic control of the oil flow and automatic heat regulation control. The machine may be arranged with special base plates to fit any particular location for mounting either on the floor or the wall. The capacity of the purifier ranges from 300 to 500 gallons per hour, dependent on the gravity or quality of the oil. Reference to the accompanying illustration shows the special features of bowl construction, such as the heavy section of the base to stabilize the bowl and prevent vibration from any unbalanced condition of the water or oil entering or leaving the bowl, the taper fit on the spindle, and the double-spindle bearings.

Operation within the bowl is indicated by the arrows. The oil passes down through the stem and out into the oil passages of the disk holder, thence downward and out to the water line, where it is subjected to the maximum centrifugal force generated in the bowl. Water, sludge and other impurities, having a greater specific gravity than the oil, are thrown to the outside and the dry or light oil is forced toward the center where it passes up inside the dividing cone and out through the oil discharge. Sludge and solid matter are imprisoned against the bowl shell. Liquids that are heavier than oil, such as water and acids, pass upward on the outside of the dividing cone and out through the water discharge.

## April Is Designated for Waste Campaign

The month of April again has been designated by the elimination-of-waste committee of the American Society of Mechanical Engineers for the Annual National Elimination of Waste campaign. This movement, begun last year, has grown remarkably and has even taken on an international aspect since the committee assisted groups in Australia, China, England, and Russia by supplying information about campaigns conducted in this country. Last year many companies conducted



*No. 11—Line drawing showing section through centrifugal oil purifier*

campaigns in their factories and an even greater number are expected to co-operate this year. A special evening session of the National Management congress at Hotel Stevens, March 3, will be devoted to the subject of waste elimination. This will be the opening meeting of the 1930 drive.

## Institute Members Form Buffalo Chapter

Buffalo members of the Gray Iron institute met recently and took preliminary steps toward forming a local chapter of the institute. Temporary officers were elected to proceed with the organization of the chapter and to bring in recommendations at the next meeting late in January.

The Buffalo chapter will constitute the first of a number of local groups to be established by the organization in important foundry centers in the country. Through the local chapters members of the institute can meet frequently for discussion of problems of mutual interest. Cost discussions, merchandising activities and other work of the institute can be applied to local conditions through the chapters. The institute is encouraging these activities and is working with the local organizations to make the meetings interesting and worth while.

A number of local meetings have been scheduled in central western cities as follows: Cincinnati, Cincinnati club, Jan. 7; Chicago, Palmer House, Jan. 14; Milwaukee, Schroeder hotel, Jan. 15; Minneapolis, Nicollet hotel, Jan. 17; Peoria, Ill., Pere Marquette hotel, Jan. 25; St. Louis, American Annex, Jan. 28; Kansas City, Kansas City Athletic club (tentative), Jan. 31; Cedar Rapids, Iowa, Roosevelt hotel (tentative), Feb. 4.

These meetings are open to all foundrymen and will start with a luncheon. The afternoon will be devoted to institute affairs and discussions.

### Convention Calendar

**Jan. 8—Mining and Metallurgical Society of America.** Meeting in New York. Percy E. Barbour, 2 Rector street, New York, is secretary.

**Jan. 9-11—American Engineering council.** Annual meeting in Washington. L. W. Wallace, 26 Jackson Place, Washington, is secretary.

**Feb. 4—American Boiler Manufacturers association.** Semiannual meeting in Cleveland. A. C. Baker, 801 Rockefeller building, is secretary.

**Feb. 7-8—American Society for Steel Treating.** Semiannual meeting at Hotel Pennsylvania, New York. W. H. Eisenman, 7016 Euclid avenue Cleveland, is secretary.

**Feb. 17-22—American Ceramic society.** Thirty-second annual convention at Royal York hotel, Toronto, Ont. Ross C. Purdy, 2525 North High street, Columbus, O., is secretary.

**March 3-7—National Industrial exposition.** At Hotel Stevens, Chicago. George Pfisterer, 308 West Randolph street, Chicago, is secretary.

## Oil Burner Association To Meet in April

The seventh annual convention of the American Oil Burner association will be held April 7-12 at Hotel Stevens, Chicago, and will feature an exposition of more extensive proportions than any show previously conducted by the organization. Some 57 manufacturers have engaged space thus far. The decision to make the exposition appeal to consumers as well as to the trade has met with the approval of exhibitors. The exposition will be open from 1:30 to 11 p. m. daily during the six days.

## Electrochemists Prepare for Spring Meeting

A feature of the program for the annual spring meeting of the American Electrochemical society to be held at Hotel Coronado, St. Louis, May 29-31, will be a symposium on "Hydro-Electrometallurgy." Refractories will be discussed at a session on May 30. Inspection trips have been scheduled to various industrial plants in the St. Louis territory and include one to the plant of the Laclede-Christy Fire Clay Products Co.

The fall meeting of the society will be held at Hotel Statler, Detroit, in September, at which time a symposium on "Prevention of Corrosion of Metals in the Automotive Industry" will be a feature.

Herbert H. Dow, president, Dow Chemical Co., Midland, Mich., and Louis Kahlenberg, chairman of the department of chemistry, University of Wisconsin, Madison, Wis., have been nominated as candidates for president of the society in 1930-31.

## Steel Treaters Schedule Papers for Meeting

Seven technical papers are to be presented at the semiannual meeting of the American Society for Steel Treating to be held at Hotel Pennsylvania, New York, Feb. 7-8. Three technical sessions are scheduled, two on Friday, Feb. 7, and one on Saturday, Feb. 8. Meetings of the board of directors, recommended practice and publication committees will be held on Feb. 6, the day preceding the opening of the meeting. The finance committee will meet on Feb. 5.

The technical papers to be presented are as follows:

**Friday, Feb. 7**

MORNING

"Nickel Alloy Steel Forgings," by Charles McKnight, International Nickel Co., New York.

"Effect of Chromium Additions to Manganese Structural Steel," by A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

AFTERNOON

"A Study of the Grain Structure in Martensite," by E. C. Bain and K. Heindlhofer, research laboratories, United States Steel Corp., Kearny, N. J.

"A Study of the Nitriding Process, Part II—The Simultaneous Introduction of Nitrogen and Carbon," by V. O. Homerberg and J. P. Walsted, Massachusetts Institute of Technology, Cambridge, Mass.

**Saturday, Feb. 8**

MORNING

"Recent Developments in Normalizing Sheet Steel," by Edward S. Lawrence, Duraloy Co., Pittsburgh.

"Some Notes on Sheet Metal and Strip Steel for Automobile Bodies," by Joseph Winlock and George L. Kelley, Edward G. Budd Mfg. Co., Philadelphia.

"Metal for Vitreous Enameling," by J. H. Nead, American Rolling Mill Co., Middletown, O.

## Leipzig Fair Announced

The Leipzig Fair, approaching its 1400th session, having been held without interruption twice a year for nearly seven centuries, is being prepared for its spring session in Leipzig, Germany, March 2-12. The newest American products designed for European consumption will be displayed in more than 100 significant exhibits. Over 2000 buyers from all parts of the United States are expected to attend. Detailed information concerning the fair can be obtained by addressing the Leipzig Trade Fair Inc., 11 West Forty-second street, New York.

## Officers Are Nominated

The American Institute of Electrical Engineers has announced nominations for officers to be elected next spring and to take office Aug. 1, 1930. The nominations are as follows: president, William S. Lee, vice president and chief engineer, Duke Power Co., Charlotte N. C.; vice presidents, North Eastern district, I. E. Moultrop, chief engineer, Edison Electric Illuminating Co., Boston; New York city district H. P. Charlesworth, vice president, Bell Telephone Laboratories, New York; Great Lakes district, T. N. Lacy, chief engineer, Michigan Bell Telephone Co., Detroit; South West district, George O. Shaad, dean, school of engineering and architecture, University of Kansas, Lawrence, Kans.; North West district, H. V. Carpenter, dean of mechanic arts and engineering and director of Engineering Experiment station, State College of Washington, Pullman, Wash.

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Airparts & Tool Corp., Detroit, has increased capital stock from 275,000 shares to 450,000 shares no par value.

## Chemical Society Elects New President

William McPherson, dean of the graduate school, Ohio State university, Columbus, O., became president of the American Chemical society Jan. 1, as a result of the society's annual election. Dean McPherson will serve during 1930, succeeding Dr. Irving Langmuir, associate director of research, General Electric Co., Schenectady, N. Y.

Moses Gomberg, professor of chemistry, University of Michigan, Ann Arbor, Mich., was chosen president for 1931. In accordance with a recent change in its constitution, the society now elects each year a president and a president-elect, who serve in successive years.

# Foundrymen Announce Tentative Program for Annual Convention

EXHIBITS embodying the latest developments in the foundry trade as well as meetings that will bring forth papers and discussion on the research and advancement of the year are planned for the thirty-fourth annual convention and twenty-third exhibit of the American Foundrymen's association to be held in Cleveland, May 12-17. The Cleveland Public auditorium and annex together afford ample accommodations for both the exposition and technical sessions.

The tentative program for the convention includes sessions on metallurgy, engineering practice, management and practical shop operation. Because of the varied interests of attending foundrymen, the sessions will be organized so as to limit the subjects covered at any one meeting. A sufficient number of sessions have been arranged, however, to cover all the important phases of foundry practice.

Because of the considerable interest aroused in past years, three round-table sessions are scheduled, covering malleable, steel and nonferrous foundry subjects. Entertainment features of convention week will include the exhibitors' dinner on May 13 and the annual banquet on May 15.

The shop operations courses, so popular at the past two annual meetings, will be broadened this year to include a course on the fundamentals of nonferrous shop practice. In addition, the two courses held in 1929 on gray iron and steel will be continued. They are being organized essentially for the practical shop man and will be conducted by leaders thoroughly familiar with shop problems, each course to consist of three or four sessions.

A number of authors new to programs of the American Foundrymen's association are scheduled to read papers at the technical sessions. The tentative list is as follows:

"Electric Gray Iron Melting," by B. C. Beach, Beach Foundry Ltd., Ottawa, Canada.

"Enameling Properties of Cast Iron as Affected by Sands Used," by C. J. Scullin, Tucker-Scullin Corp., St. Louis.

"Use of Briquetted Borings in the Cupola," by F. J. Walls, Wilson Foundry & Machine Co., Pontiac, Mich.

"Personnel Training," by Dr. Harry Meyer, Frigidaire Corp., Dayton, O.

"Cleanliness and Neatness of the Foundry as a Business Asset," by J. J. Carroll, G. & C. Foundry Co., Sandusky, O.

"Application of Ingot Metal to Production of Brass and Bronze Castings," by W. Romanoff, H. Kramer Co., Chicago.

"Effect of Pin Hole Porosity on Properties of Sand Cast Aluminum Alloys," by E. M. Gingérich and H. J. Rowe, Aluminum Co. of America, Pittsburgh.

"Heat Treating Cast Iron," by F. J. Walls, Wilson Foundry & Machine Co., Pontiac, Mich.

"Carbon and Sulphur Equilibrium in Cupola," by J. T. MacKenzie, American Cast Iron Pipe Co., Birmingham, Ala.

"Effect of Prolonged Heating at Various Temperatures on Cast Iron," by R. S. MacPherran, Allis-Chalmers Mfg. Co., Milwaukee.

"Steel Melting Problems," by George Batty, Steel Castings Development bureau, Philadelphia.

"Factors Affecting Machinability of Malleable Iron," by H. A. Schwartz, National Malleable & Steel Castings Co., Cleveland.

"Duplexing Process of Producing Malleable Iron," by B. R. Mayne, Saginaw Products Co., Saginaw, Mich.

"Foundry Sand Control from Producers' Point of View," by W. W. Kerlin, Enterprise Sand Co., Conneaut, O.

"Gating and Risering of Castings," by E. Ronceray, Bonvillain & Ronceray, Choisy-le-Roi, France.

"Wear Testing of Cast Iron," by R. M. Allen, American Car & Foundry Co., New York.

"Technical Control of Brass Foundry Mixtures," by H. C. Loudenbeck and A. M. Ondreyco, Westinghouse Air Brake Co., Wilmerding, Pa.

"Induction Furnaces for Ferrous and Nonferrous Foundries," by Manuel Tama, Berlin, Germany.

# CONSTRUCTION *and* ENTERPRISE

***Concise Timely Business Building Opportunities from Field of Industry***

## North Atlantic

MIDDLETOWN, CONN.—Wilcox, Crittenden & Co. Inc., 3 South Main street, has awarded the contract for the erection of a one and 2-story foundry and boiler house addition to T. H. Sellew, Cromwell, Conn. (Noted Dec. 19.)

WASHINGTON—A. L. Flint, general purchasing officer, the Panama Canal, Washington, will receive bids to Jan. 17 for air hoists, pumps, cast iron pipe, steel fittings, air compressors, electrical supplies and motors.

INDIAN ORCHARD, ME.—Chapman Valve Mfg. Co., expects to erect a 75 x 152-foot plant addition.

BEVERLY, MASS.—Reid Bros., Park street, have awarded contract for the construction of a 1-story machine shop, 60 x 200 feet at Dock and Elliott street.

EVERETT, MASS.—Standard Mailing Machine Co., Revere Beach parkway, has awarded the contract for alteration to plant estimated to cost $40,000.

SOUTH HADLEY, MASS.—Carew Mfg. Co., Canal street, South Hadley Falls, Mass., is planning the construction of a 1-story boiler house estimated to cost $40,000.

WATERTOWN, MASS.—J. W. Greer Co., 110 Windsor street, Cambridge, Mass., maker of confectionery machinery, awarded the contract for the construction of a 2-story, 80 x 500-foot plant to Tredennick-Billings Co. 10 High street, Boston. Estimated cost is $40,000. (Noted July 4.)

HINSDALE, N. H.—Granite State Mowing Machine Co. is building a plant addition that will afford an increase in capacity of more than 50 per cent.

CARLSTADT, N. J.—Board of education, Boro hall, plans the erection of a 2-story school to include laboratory and manual training units. Cost is estimated at $250,000.

NEWARK, N. J.—Positive Lock Washer Co., avenue A, is receiving bids through R. B. Flatt, architect, 600 Bloomfield avenue, Bloomfield, N. J., for a 2-story plant addition to cost approximately $40,000.

PERTH AMBOY, N. J.—American Smelting & Refining Co., Maurer street, will construct a 1-story plant addition to cost $40,000.

BUFFALO—Arrow Head Steel Products Co., 180 Hopkins street, will probably build a 1-story forge shop and foundry to cost $100,000. E. A. Earle is plant manager.

LONG ISLAND CITY, N. Y.—T. J. Rumney, 81 Hancock place, has placed contract for the erection of a 1-story welding shop at Hancock road and Forty-third street.

MT. VERNON, N. Y.—Westchester Milling Corp., 22 East Sidney avenue, will take bids about Jan. 15 on the construction of a 1-story shop and warehouse estimated to cost about $15,000.

NEW YORK—R. Hoe & Co., 504 Grand street, is planning the construction of a plant addition at Walnut and 137th streets. F. S. Parker, 119 West Fifty-seventh street, is engineer.

NEW YORK—Board of education, St. Nicholas terrace, will receive bids early in February for the construction of a three or 4-story school with laboratory at Navy and Bedford avenues, estimated to cost $1,000,000.

NEW YORK—C. E. Appleby, 17 John street, has plans for a plant addition at 602 West Fortieth street, which will cost approximately $200,000. R. C. Clark, 491 West Thirty-ninth street, is architect.

PORT RICHMOND, N. Y.—United Dry Docks Inc., Mesereau and Davidson streets, contemplates building a foundry and shop estimated to cost $80,000.

ST. GEORGE, N. Y.—Department of parks, Arsenal building, Central park, New York, contemplates the construction of a 2-story addition, 75 x 136 feet, to power plant, including boiler room and shops.

WILLARD, N. Y.—Bids will be received after Jan. 15 by the department of mental hygiene, State Capitol, Albany, N. Y., for the contract covering alteration and addition to power plant for the Willard state hospital. Equipment will be needed.

PHILADELPHIA—Crane Co., South Thirteenth street, has been granted a permit for the erection of a plant and warehouse at Meadville and Kinsey streets. Ketcham & McQuade, 1029 Brown street, are architects.

PHILADELPHIA—Electric Service Supply Co., Seventeenth and Cambria streets, manufacturer of electrical railway equipment, will receive bids about Jan. 20 for a plant improvement and addition. Conrad F. Neff, Twelfth and Locust streets, is architect.

PITTSBURGH—Dravo Contracting Co. will expend more than $750,000 on improvements to its Neville island and Christiana river, Del. plants. A steel storage yard with crane facilities is planned for the Neville island plant near here. The structural shop will be enlarged and new shear, punch and hydraulic press equipment will be purchased. A complete outfitting dock has been started at the Delaware plant.

POLK, PA.—Polk State school has awarded the contract for new engine generator units to Elliott Co., Morris building, Philadelphia. (Noted Nov. 14.)

## East Central

CHICAGO—American Boiler & Tank Co., 2722 Hillock avenue, has acquired a three and a half-acre tract at Naragansett avenue and Fifty-ninth street, possibly for future expansion.

CHICAGO—Triplex Tool Co., 228 North La Salle street, recently incorporated to manufacture a lifting jack, expects to construct a plant building within a few months.

CHICAGO—United Autographic Register Co., 2316 West Forty-third street, will receive bids in January for the construction of a 1 and 2-story plant at California and West Fiftieth streets. Estimated cost is $1,000,000. (Noted Dec. 19.)

CHICAGO—Continental Scale Mfg. Co., 5701 South Claremont avenue, has let general contract for construction of a 3-story plant to Leopold Halper, 5956 South Washtenaw avenue, and bids will be received on subcontracts after Jan. 15.

CHICAGO—Ludlow Typograph Co., 2032 Clybourn avenue, manufacturer of composing room equipment for printing establishments, has purchased a tract, 405 x 699 feet, at Elston avenue

and Logan boulevard. Building will not be started immediately.

DANVILLE, ILL.—Electric Coal Mining Machinery Co., 309 St. Johns court, is receiving bids through C. M. Lewis, architect, Adams building, for the erection of a 1-story plant addition.

DECATUR, ILL.—Decatur Pump Co. has completed a 2-story plant addition and expects to use the increased space for engineering and testing apparatus.

DEKALB, ILL.—American Steel & Wire Co., 208 South LaSalle street, Chicago, has let contract for the erection of a plant, 55 x 75 feet, for the manufacture of wire netting. Skoglund & Wedberg, DeKalb, Ill., are general contractors.

HARVEY, ILL.—Wyman-Gordon Co., Wood avenue and 146th street, maker of drop forgings and other steel products, has purchased a 5-acre tract to be used in a contemplated plant expansion program, although no definite building plans are announced at this time.

HOOPESTON, ILL.—Vermilion Malleable Iron Co. plans the construction of a 1-story foundry addition at North Sixth street and Nickel Plate railroad. F. C. Moore is manager.

PALATINE, ILL.—Economy Fuse & Mfg. Co. has acquired a plant here and will begin operations in January.

CLARK FORK, IND.—Machine shop and parts room at the Whitedelf mine was recently damaged by fire.

ELWOOD, IND.—Monticello Mfg. Co., maker of racks and shelving, will remodel plant building at South J and Twenty-second streets soon.

EVANSVILLE, IND.—International Steel & Iron Co. plans to expand with a plant addition 555 feet long. F. O. Weber is president and general manager.

MICHIGAN CITY, IND.—Haskell & Barker plant of the Pullman Car & Mfg. Corp. may reopen the Haskell & Barker brass foundry, closed for 10 years.

NEWCASTLE, IND.—Thomas Mfg. Co., maker of builders' hardware and steel products, has begun construction of a plant building.

DETROIT—Michigan Gear & Engineering Co., 19 West Woodbridge street, recently purchased a site at Tenth and Leverette streets upon which it will later erect a building.

DETROIT—Detroit-Edison Co., 2000 Second boulevard, will build a 3-story 100 x 150-foot substation on Howard street. Estimated cost is $375,000, plans are private and work will be done under separate contracts.

DETROIT—Michigan Tank & Galvanizing Co., 14101 Prairie avenue, is having plans prepared for a 1-story addition, 150 x 400 feet, on Tireman avenue. Estimated cost is $180,000 and plans are private. (Noted Dec. 26.)

GRAND RAPIDS, MICH.—Liberman & Gittlen Metal Co., Front avenue, was recently damaged by an explosion.

HOUGHTON, MICH. — State administrative board, Lansing, Mich., is taking bids for addition and remodeling of the Michigan College of Mining and Technology engineering building at an estimated cost of $300,000. The addition will be 3 stories, 100 x 140 feet. Plans are by Derrick Hubert, architect, Menominee, Mich.

LANSING, MICH.—Lansing Steel Corp., West Saginaw street, advises it has let contract for part of plant for the designing, fabrication and erection of structural steel. Electric hoists, craneway span, friction saw and bolt threading machine are among the new machinery and equipment required. C. E. Brum is president.

OWOSSO, MICH.—Ann Arbor railroad expects to rebuild the coach repair shop recently damaged by fire. The loss was approximately $100,000.

SOUTH HAVEN, MICH.—City, care department of public works, W. C. Spencer, clerk, will receive bids after Jan. 17 for the construction of improvements to the city power house. Estimated cost is $100,000. (Noted Nov. 28.)

DAYTON, O.—Harris-Thomas Drop Forge Co., 126 Harshman street, expects to draw up plans in the spring for the construction of a plant building.

DAYTON, O.—Duriron Co. Inc., manufacturer of castings, North Findlay street, contemplates construction of a plant addition to contain modern equipment for analysis and testing, an experimental foundry, rolling mill, and machine shop. Plans are nearing completion.

LORAIN, O.—Thew Shovel Co. plans expansion of manufacturing plant and installation of electric power equipment to cost $100,000.

NEW CONCORD, O.—Philo Power plant expects to construct a boiler house addition, work to be started in March.

ST. BERNARD, O.—Emery Industries Inc. awarded a contract for the construction of a steam and electric power plant estimated to cost about $32,000 to Geerin Bros. & Co., 422 East Eighth street, Cincinnati.

TOLEDO, O.—Toledo Steel Products Co., 3300 Summit avenue, is completing a plant addition. New steel forging equipment for the production of heat-resisting steel valves is installed, and other expenditures involving a grand total of $200,000 are being made.

KENOSHA, WIS.—The Wisconsin Oxygen & Hydrogen Co. plans immediate repairs costing about $5000 for damage caused by an explosion a short time ago. Albert Steinbrecher is general manager. (Noted Dec. 26.)

MILWAUKEE—Milwaukee Flush Valve Co., 125 Reservoir avenue, is about to build a shop addition, 25 x 80 feet.

MILWAUKEE—Alexander G. Goethel Sheet Metal Works Co., 818 Winnebago street, contemplates plant construction, although architect has not been selected. Alexander G. Goethel is president.

MILWAUKEE—Magnetic Mfg. Co., 275 Twenty-third avenue, maker of magnetic separators for industrial purposes, has let the general contract to Meredith Bros. Co., 253 Washington street, for the erection of a shop addition, 25 x 34 feet, and an additional story on another building.

NEW LONDON, WIS.—Council has granted a franchise to the Central Wisconsin Gas Co., 22 West Monroe street, Chicago, to build and operate a plant here.

SOUTH MILWAUKEE, WIS.—Council has engaged Parkinson & Dockendorff, architects, LaCrosse, Wis., to prepare plans for a new vocational school costing about $75,000 to replace the structure recently damaged by fire. Herman Daehling is secretary of the board.

WATERTOWN, WIS.—The Otto Biefeld Co., 202 North Water street, contemplates the erection of an additional shop for the enlarging of its steel fabrication department. Plans are being drawn by the company's engineers.

WAUPACA, WIS. — Central Wisconsin Gas Co., 22 West Monroe street, Chicago, subsidiary of Utilities Gas & Electric Co., has been granted a franchise to build and operate a gas plant and distributnig system here. The work will be in charge of Jay S. Hart, consulting engineer, 122 West Washington avenue, Madison, Wis.

WEST ALLIS, WIS. — Allis-Chalmers Mfg. Co., Sixty-second and Greenfield avenues, will receive bids after Feb. 1 for the construction of a 1-story transformer and switch gear building to cost about $2,500,000, as well as for the construction of a 1-story welding shop to cost $100,000. (Noted Oct. 31.)

## Southern States

BIRMINGHAM, ALA.—Southern States Equipment Co., manufacturer of electrical equipment, has plans for a plant addition. George Lemon, 1923 Powell avenue, is president.

FORT SMITH, ARK.—Yaffee Iron & Metal Co., 501 South Eleventh street, has let contract for a 1-story plant addition estimated to cost about $30,000.

ATLANTA, GA.—Commercial Acetylene Supply Co., South Moreland avenue, will construct a 1-story plant. C. V. Britten, Thrower building, is engineer.

LOUISVILLE, KY.—J. V. Pilcher Mfg. Co., 709 East Gray street, manufacturer of metal specialties, closed bids Dec. 27 through D. X. Murphy & Bro., architects, Louisville Trust building, for the erection of a 3-story plant addition, 42 x 75 feet.

HARVEY, LA.—Continental Can Co. Inc., 100 East Forty-fourth street, New York, has acquired a site here for plant expansion.

SHREVEPORT, LA.—City has awarded contract for engineering plans on construction of a pump station near Cross lake to J. N. Chester Engineering Co., Clark building, Pittsburgh. The cost will be about $500,000.

WALTHAL, MISS. — Mississippi Power Co., Gulfport, Miss., considers construction of a power substation at Walthal, Miss., to cost approximately $25,000.

TULSA, OKLA.—Pittsburgh Equitable Meter Co., 400 Lexington avenue, Homewood, Pittsburgh, is erecting a plant to manufacture meters and regulators. A. J. Kerr, 834 Kennedy building, Pittsburgh, is district manager.

TULSA, OKLA.—Bartlett Electric Co., a con-

solidation of motor departments of Dodge Electric Co. and Oklahoma Armature Works, plans construction of new plant for repair of motors and generators. L. A. Bartlett is general manager.

BEAUMONT, TEX.—Hacker Machinery & Supply Co. has completed new shop building, 50 x 70 feet, at Bonham and Mariposa streets for manufacture of oil field tools.

BEAUMONT, TEX.—Sampson Iron & Metal Co. will build warehouse for machinery and supplies, 60 x 100 feet, adjoining present plant at Holmes and Crockett streets.

BIG SPRINGS, TEX.—Texas & Pacific railroad, Dallas, Tex., is enlarging its engine terminal facilities here.

DEL RIO, TEX.—Del Rio Refining Co. is making additions to its oil refinery including new stills and boiler house equipment.

FT. WORTH, TEX.—Victory College is having plans prepared for group of buildings including a power plant. W. C. Hedrick, First National Bank building, is architect.

HOUSTON, TEX.—Wyatt Metal & Boiler Works is completing 40 x 90-foot addition to plate fabricating shop.

HOUSTON, TEX.—Adair Machine Works, 2412 Railroad avenue, plans enlargement of shop for manufacture of oil field tools.

HOUSTON, TEX.—Stewart & Stevenson, 1719 Preston avenue, plan a building for repair of automobile bodies to cost $100,000.

HOUSTON, TEX.—Houston Armature Works, Bastrop and Prarie streets, has awarded contract for new plant construction, 100 x 150 feet, to J. A. Roberts, 4321 Center street.

HOUSTON, TEX.—Houston Armature Works, 4 Preston avenue, has let contract for the erection of a plant addition estimated to cost $50,000. (Noted Sept. 5.)

HOUSTON, TEX.—Humble Oil & Refining Co. has awarded contract to Houston Structural Steel Co. for construction of all steel compressor station, 40 x 70 feet, on producing lease near Sugarland, Tex.

MIDLAND, TEX.—L. B. Crawford, engineer, Dallas, Tex., has been awarded contract for construction of hangars and administration buildings at Midland airport.

PRARIE VIEW, TEX.—Prarie View College will erect a 1 or 2-story shop building with complete equipment estimated to cost $100,000.

BIG ISLAND, VA.—Chesapeake & Ohio railroad, Richmond, Va., has let the contract for construction additions estimated to cost about $30,000 to Carpenter-Major Bros. Co., Clifton Forge, Va.

## West Central

ARKANSAS CITY, KANS.—Empire Gasoline Co. is rebuilding its oil-absorption gasoline plant and is installing additional pumps and compressors to increase daily capacity of 10,000 gallons of gasoline.

FREMONT, NEBR.—City proposes extensions in municipal light and power plant to cost about $60,000, although date for construction is indefinite as yet.

JAVA, S. DAK.—Eureka Machine Shop was recently damaged by fire. A. F. Obenauer is owner.

## Western States

CHUALAR, CALIF.—Pacific Gas & Electric Co., 445 Sutter street, San Francisco, is having plans prepared for a substation here estimated to cost $55,000.

OAKLAND, CALIF.—H. B. Body Co., Nineteenth and Livingston streets, will build a cannery and power house to cost $100,000 on West Sixty-sixth avenue.

DENVER—Chicago, Burlington & Quincy railroad contemplates construction during the coming year of addition to engine plant on Twenty-third street. E. P. Bracken, 547 Jackson boulevard, Chicago, is vice president. Estimated cost is $100,000.

LA VETA, COLO—Magnolia Mining Co. has plans for the construction of an ore treating mill. E. C. Talmadge, Denver, is owner.

PUEBLO, COLO.—Pueblo Brass & Iron Foundry, Greenwood street and North Victoria avenue, may enlarge plant facilities and contemplates installing new equipment.

TACOMA, WASH.—City has plans for immediate construction of power plant facilities. Estimated cost will be $350,000.

WENATCHEE, WASH.—E. T. Pybus Co. is having plans prepared for a foundry to be erected in South Wenatchee, Wash.

WENATCHEE, WASH.—Sheeley Contracting Co., St. Paul, is erecting bunkers and rock crushing machinery for the Great Northern railway here.

## Recent Incorporations

DOVER, DEL.—American Glass Machine Corp., Philadelphia, has been incorporated with $100,000 and 2500 shares of common stock as capital to engage in the iron, steel, coke, and copper business, by the Guarantee & Trust Co., Philadelphia.

JACKSONVILLE, FLA.—McCrary Engineering Co. has been incorporated by Charles W. Hughes, 1009 Wolf street.

MIAMI, FLA.—Ice Machine Service Corp. has been incorporated by Rex C. Snell, 1627 Northwest Third street.

CHICAGO—C. A. Myers Co., 6324 Woodlawn avenue, has been incorporated with 500 shares of no par stock to manufacture sewing awls and other appliances by Perley H. Bishop, 77 West Washington street.

BOSTON—Morris Ireland Safe Co., 64 Sudbury street, has been incorporated with 500 shares of no par stock to manufacture vaults and vault doors. Sumner H. Sandberg, Melrose, Mass., is president and treasurer.

BOSTON—George Allen & Son Inc. has been incorporated with 500 shares of no par stock to manufacture and deal in machinery, tools and appliances. George Allen, 205 East Eighty-fifth street, New York, is president.

BOSTON—Cape Refrigerating Co. has been incorporated with $50,000 preferred and 2500 shares of common stock to manufacture and sell refrigerators and equipment. Raymond T. Shipley, 84 State street, Boston, is president and treasurer.

BOSTON—McLean Store Fixture Corp., 292 Dorchester street, has been incorporated with $50,000 preferred and $100,000 of common stock to manufacture office and bank fixtures, fittings and equipment. Isaac A. McLean, 108 Hammond street, Newton, Mass., is president.

LINDEN, MASS.—International Merchandising & Trading Co. has been incorporated with 1000 shares of no par stock to deal in smelting and refining of metals. Willard O. Butler, 47 Linden street, Everett, Mass., is president.

MEDFORD, MASS.—Baltzer Boat Co. has been incorporated with $25,000 to build marine machinery and boats. Sylvester S. Baltzer, 24 Cottage Park road, is president.

NEWTON, MASS.—C. E. Jeffrey Motor Co. has been incorporated with $50,000 capital to manufacture motors of all kinds, parts and devices. Charles E. Jeffrey Jr., 725 Commonwealth avenue, Newton, is president and treasurer.

SOMERVILLE, MASS.—Fred C. Hald Inc. has been incorporated with 2500 shares each of preferred and common stock to manufacture and deal in automobile parts, supplies and equipment. Fred C. Hald, 9 Broadway, is president.

SPRINGFIELD, MASS.—Satin Electric Corp. has been incorporated with 1000 shares of no par stock to manufacture and deal in electric motive power, lighting and heating equipment. Isidore Satin, 35 Long Hill street, is president and treasurer.

DETROIT—Masco Screw Products Co., 5030 Commonwealth avenue, has been incorporated with $40,000 capital to manufacture screw machine products.

DETROIT—Hutchinson Welding Co. Inc.,

1314 Fourth street, has been incorporated with $10,000 and 1000 shares of no par stock as capital to engage in steel work.

DETROIT—G. & W. Mfg. Co., 7250 Central avenue, has been incorporated with 10,000 no par shares of stock to manufacture automo-

DETROIT—Wolverine Screw Co. Inc., 624 St. Jean street, has been incorporated with 1000 shares of no par stock to manufacture and deal in screws, screw products and machinery. John W. Eckelberry, 3102 Union Trust building.

DETROIT—United Parts Corp., 4145 Cass avenue, has been incorporated with $10,000 to manufacture, repair and sell automobile parts, accessories, equipment and machinery by John J. Fitzgerald, 143 Charlotte street.

MONETT, MO.—Bowen Bros. Hoe & Tool Co. has been incorporated with $25,000 capital by Fred D. Bowen and E. L. Jerome.
bile equipment, engines and motors by Frederick Colman, 2475 West Boston street.

EAST ORANGE, N. J.—Plainfield Harrison Co. has been incorporated with $100,000 preferred and 2000 shares of common stock to manufacture electrical refrigerators by the New Jersey Registration & Trust Co.

GLOUCESTER, N. J.—Clark-Rogers, Inc. has been incorporated with 250 shares of common stock to manufacture aircraft by George V. Strong, attorney, Widener building, Philadelphia.

HOBOKEN, N. J.—Saue Surgical Appliances Corp. has been incorporated by Pierson, Schroeder & Brand, 84 Washington street, with $50,000 capital to engage in the manufacture of surgical instruments.

NEWARK, N. J.—Breen Iron Works has been incorporated with 2000 shares of common stock by Kanter & Kanter, 1060 Broad street.

NEWARK, N. J.—American Metal Products Co., 293 South Orange avenue, has been incorporated with $100,000 capital to manufacture metal products by Aaron Livingstone, 24 Commerce street.

WEST NEW YORK, N. J.—West New York Iron Works has been incorporated with $50,000 capital by Manetti & Echentille, attorneys, 988 Bline street, Union City, N. J.

NEW YORK—Davenport Welding Co. has been incorporated with $1000 capital by J. J. Calanese, 369 Lexington avenue.

SANDUSKY, O.—Sandusky Automatic Machine Products Co. has been incorporated with $50,000 capital stock to manufacture special automobile parts. George A. Schwer, 402 East Washington street, is president.

TULSA, OKLA.—National Pipe & Supply Co. has been incorporated with $10,000 capital by David R. Milstein, Tulsa Trust building.

EL PASO, TEX.—Modern Iron Works has been incorporated with $6000 capital by Chas. E. Schillinger.

SAN ANTONIO, TEX.—O. K. Lead Works has been incorporated with $10,000 capital by B. H. Bruner.

VANCOUVER, B. C.—Canadian Tractor & Equipment Co. Ltd. has been incorporated with $10,000 capital stock to manufacture and deal in tractors and machinery by Charles W. Tysoe.

HAMILTON, ONT.—Craigon Engines Ltd. has been incorporated with 1000 shares of no par stock to manufacture engines and other machinery, by Collin W. G. Gibson, 22 Homewood street.

NIAGARA FALLS, ONT.—National Gunite Contracting Co. of Canada Ltd. has been incorporated with 1000 shares of no par stock to carry on a general engineering and contracting business by John M. Bullen, attorney, Temple building, Toronto, Ont.

SARNIA, ONT.—Electric Auto-Lite Ltd. has been incorporated to manufacture and deal in mechanical and electrical appliances, and metal products with $500,000 capital stock by Charles S. Woodrow, Charles E. Woodrow, John R. Donohue, all of Sarnia, Ont.

TORONTO, ONT.—Graham Nail & Wire Products Ltd. has been incorporated with 10,000 no par shares by MacNeil C. McLean, attorney, Mail building.

TORONTO, ONT.—Line & Cable Accessories Ltd. has been incorporated with $50,000 to manufacture and deal in electrical equipment and supplies by Charles D. Magee, 230 St. George street.

MONTREAL, QUE.—Frank S. Lauria Ltd. has been incorporated with $49,000 as capital to manufacture and deal in machinery and accessories, by Lewis K. Freedman, attorney, 276 St. James street, west.

MONTREAL, QUE.—Consolidated Construction Co. Ltd. has been incorporated with $400,000 and 65,000 shares of no par stock to manufacture builders' material and engage in general contracting, by Theodore B. Heney, 710 Pine street, west.

# New Trade Publications

PNEUMATIC TOOLS—Cleveland Pneumatic Tool Co., Cleveland, has compiled a new catalog of its products, No. 30, which is ready for distribution.

PLATING—New Jersey Zinc Co., New York, has published a 12-page bulletin giving information on the plating of zinc base die castings and rolled zinc. The data includes polishing, cleaning, acid dipping, plating.

DRAFT CONTROL—Shallcross Control Systems Co., Milwaukee, in a current bulletin describes its system of draft control for power plants. Illustrations cover the device and its application.

STEEL CASTINGS—Alloy Cast Steel Co., Marion, O., calls attention in a current leaflet to its capacity for production of steel castings and good quality revealed by machining and other tests.

COMPRESSORS—Ingersoll-Rand Co., 11 Broadway, New York, has issued a folder on its new line of air compressors. Illustrations point out advantages and features of the machines and phantom views show design and construction. A table gives specifications.

POILERS—A folder by the Combustion Engineering Corp., New York, describes a type of its boilers with bent tubes, designed for limited space conditions and low headroom. A table of dimensions is given and drawings show setting dimensions for various sizes.

GENERATING SETS—Engberg division of the Troy Engine & Machine Co., St. Joseph, Mich., has issued a bulletin on its generator sets for stationary service. The engine and generator are shown in detail, with a drawing and table of dimensions.

CHIPPING HAMMERS—Ingersoll-Rand Co., 11 Broadway, New York, is distributing a folder on its new line of high speed, pneumatic chipping hammers. The folder contains views of the various types that make the complete line and shows sectional illustrations of the machine.

TUNGSTEN CARBIDE—Porter-Cable Machine Co., Syracuse, N. Y., has published a combined catalog and book of information on the subject of turning with tungsten carbide. One section is devoted to the reasons for the use of this material and the other covers the equipment manufactured by this company.

BUS-BAR SUPPORTS—A circular on bus-bar supports has been issued by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. It describes the line of standard duty and heavy duty bus-bar supports, giving details of construction, distinctive features and fittings. Dimensioned drawings are included.

GRINDING EQUIPMENT—Cincinnati Grinders Inc., Cincinnati, will shortly distribute a booklet on precision grinding applications. It shows about 40 grinding machine installations in a wide variety of work, with description of each job, including production data, limits of accuracy, operating features and other details. Bulletins by this company include one on labor-saving hoppers for centerless grinders and one on two types of these grinders.

FURNACES—Penicud & Co., Bagnolet, France, has issued a 22-page catalog describing the various types of furnaces that it manufactures. The furnaces are oil or coke-fired for the melting of metals in crucibles or iron pots. Features of construction of the furnaces are shown diagrammatically.

CONVEYORS—Standard Conveyor Co., North St. Paul, has published a catalog of its conveyor equipment. It contains illustrations of various types of its equipment and gives uses, advantages and applications to specific industries. A section is devoted to illustrations of typical installations and another part contains working drawings.

MICROSCOPES—E. Leitz Inc., 60 East Tenth street, New York, announces in a current bulletin introduction of a wide field binocular microscope with automatic multiple objective nosepiece. It is designed for service in metallurgical laboratories for examination of metal surfaces, gross specimens and fractures under low and medium powers.

FOUNDRY PRACTICE—Whiting Corp., Harvey, Ill., is distributing a reprint of an address before the Chicago Foundrymen's club by R. S. MacPherran, chief chemist, Allis-Chalmers Mfg. Co., Milwaukee, on the trip he took in connection with the third international foundrymen's congress in London. It contains valuable data on foundry practice in Europe and data on perlit iron.

# Pipe and Tube Prices—Plate Extras

## Steel Pipe

**(Base price $200 per ton)**

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2½ points less than Pittsburgh-Lorain basis.

**Butt Weld**

| | Black | Galvanized |
|---|---|---|
| ⅛-inch | 45 | 19½ |
| ¼ and ⅜-inch | 51 | 25½ |
| ½-inch | 56 | 42½ |
| ¾-inch | 60 | 48½ |
| 1 to 3-inch | 62 | 50½ |

**Lap Weld**

| | | |
|---|---|---|
| 2-inch | 55 | 43½ |
| 2½ to 6-inch | 59 | 47½ |
| 7 to 8-inch | 56 | 43½ |
| 9 and 10-inch | 54 | 41½ |
| 11 and 12-inch | 53 | 40½ |

**REAMED AND DRIFTED**

**Butt Weld**

| | | |
|---|---|---|
| 1 to 3-inch | 60 | 48½ |

**Lap Weld**

| | | |
|---|---|---|
| 2-inch | 53 | 41½ |
| 2½ to 6-inch | 57 | 45½ |

**EXTRA STRONG—PLAIN ENDS**

**Butt Weld**

| | | |
|---|---|---|
| ⅛-inch | 41 | 24½ |
| ¼ and ⅜-inch | 47 | 30½ |
| ½-inch | 53 | 42½ |
| ¾-inch | 58 | 47½ |
| 1 to 1½-inch | 60 | 49½ |
| 2 to 3-inch | 61 | 50½ |

**Lap Weld**

| | | |
|---|---|---|
| 2-inch | 53 | 42½ |
| 2½ to 4-inch | 57 | 46½ |
| 4½ to 6-inch | 56 | 45½ |
| 7 to 8-inch | 52 | 39½ |
| 9 and 10-inch | 45 | 32½ |
| 11 and 12-inch | 44 | 31½ |

**DOUBLE EXTRA STRONG**

**Butt Weld**

| | | |
|---|---|---|
| ½-inch | 42 | 32½ |
| ¾ to 1½-inch | 45 | 35½ |
| 2 to 2½-inch | 47 | 37½ |

To jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

## Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

**THREADS AND COUPLINGS**

**Butt Weld**

| | Black | Galv. |
|---|---|---|
| ¼ and ⅜-inch | +11 | +36 |
| ½-inch | 23 | 5 |
| ¾-inch | 28 | 11 |
| 1 and 1¼-inch | 31 | 15 |
| 1½ and 2-inch | 35 | 18 |

**Lap Weld**

| | | |
|---|---|---|
| 1¼ and 1½-inch | Upon application | |
| 2-inch | 23 | 9 |
| 2½ to 3½-inch | 28 | 12 |
| 4 to 6-inch | 30 | 17 |
| 7 and 8-inch | 29 | 16 |
| 9 to 12-inch | 26 | 11 |

**REAMED AND DRIFTED**

**2-inch to 6-inch—Two points less than above**

**EXTRA STRONG, PLAIN ENDS**

| | | |
|---|---|---|
| ¼ and ⅜-inch | +13 | +48 |
| ½-inch | 23 | 7 |
| ¾-inch | 28 | 12 |
| 1 to 2-inch | 34 | 18 |

**Lap Weld**

| | | |
|---|---|---|
| 2-inch | 29 | 13 |
| 2½ to 4-inch | 34 | 20 |
| 4½ to 6-inch | 33 | 19 |
| 7 and 8-inch | 31 | 17 |
| 9 to 12-inch | 21 | 8 |

**DOUBLE EXTRA STRONG**

**Butt Weld**

| | | |
|---|---|---|
| ½-inch | +47½ | +59½ |
| ¾-inch | +28 | +40 |
| 1-inch | +34 | +46 |
| 1¼-inch | +28 | +40 |
| 1½-inch | +27 | +39 |

**Lap Weld**

| | | |
|---|---|---|
| 2 and 2½-inch | +13 | +25 |
| 3 to 4-inch | + 8 | +17 |
| 4½ to 6-inch | + 9 | +18 |
| 8-inch | +12 | ..... |

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

## Boiler Tubes

**Pittsburgh carload discounts**

**STEEL (Lap Weld)**

| | |
|---|---|
| 2 and 2¼-inch | 38 off |
| 2½ and 2¾-inch | 46 off |
| 3-inch | 52 off |
| 3¼ to 3¾-inch | 54 off |
| 4-inch | 57 off |
| 4½ to 6-inch | 46 off |

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

**CHARCOAL IRON**

| | |
|---|---|
| 1½-inch | 1 off |
| 1¾-inch | 8 off |
| 2 and 2¼-inch | 13 off |
| 2½ and 2¾-inch | 16 off |
| 3-inch | 17 off |
| 3¼ to 3½-inch | 18 off |
| 4-inch | 20 off |
| 4½-inch | 21 off |

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discount reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

**SEAMLESS COLD DRAWN**

| | |
|---|---|
| 1-inch | 61 off |
| 1¼ and 1½-inch | 53 off |
| 1¾-inch | 37 off |
| 2 and 2¼-inch | 32 off |
| 2½ and 2¾-inch | 40 off |
| 3-inch | 46 off |
| 3¼ and 3½-inch | 48 off |
| 4-inch | 51 off |
| 4½, 5 and 6-inch | 40 off |

**SEAMLESS HOT ROLLED**

| | |
|---|---|
| 1¾-inch | 37 off |
| 2 and 2¼-inch | 38 off |
| 2½ and 2¾-inch | 46 off |
| 3-inch | 52 off |
| 3¼ and 3½-inch | 54 off |
| 4-inch | 57 off |
| 4½, 5 and 6-inch | 46 off |

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

**SEAMLESS STEEL MERCHANT BOILER TUBES**

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

**SEAMLESS STEEL MECHANICAL TUBING**

**Base Discounts on New List July 1, 1925**

Carbon 0.10 to 0.30 per cent.....50 to 55 off

Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

**SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES**

| Outside diameter | Gage | Net prices per foot f.o.b. Pittsburgh Price |
|---|---|---|
| 2-inch | 12-gage | 14¼c |
| 2-inch | 11-gage | 15c |
| 2-inch | 10-gage | 16c |
| 2¼-inch | 12-gage | 16c |
| 2¼-inch | 11-gage | 17c |
| 2¼-inch | 10-gage | 18c |
| 3-inch | 7-gage | 38c |
| 5⅜-inch | 9-gage | 50c |
| 5½-inch | 9-gage | 52c |

Plus usual extras for forming and for lengths over 24 feet.

## Plate Extras

**BASE**

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inches long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

**All Plates Rectangular or Otherwise**

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

| | |
|---|---|
| Over 100 to and including 110 inches | .05c |
| Over 110 to and including 115 inches | .10c |
| Over 115 to and including 120 inches | .15c |
| Over 120 to and including 125 inches | .25c |
| Over 125 to and including 128 inches | .50c |

Plates less than ¼-inch or lighter than 11 pounds per square foot.

| | |
|---|---|
| Over 72 to and including 84 inches | .10c |
| Over 84 to and including 96 inches | .20c |
| Over 96 to and including 100 inches | .30c |

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

**GAGE**

**Plates Not Exceeding 72 Inches Wide**

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

**Plates Over 72 Inches Wide**

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot, to but not including 7.65 pounds square foot.... .20c

Plates ordered 7.65 pounds square foot .30c

**QUALITIES**

| | |
|---|---|
| Pressing steel | .10c |
| Flange steel (boiler grade) | .15c |
| Ordinary firebox steel | .20c |
| Stillbottom steel | .30c |
| Locomotive firebox steel | .50c |
| Marine steel | 1.50c |
| Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel | .10c |
| High tensile hull steel subject to U. S. navy department or equivalent specifications | 1.00c |
| Boiler steel subject to U. S. navy department specifications, classes A-B.. | 1.50c |
| Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel. | |

**Floor Plates**

Checkered plates ..... 1.75c

Checkered plates are not furnished to sketch and are rolled from "Stock Steel" only. No physical tests will be made on checkered plates.

**INSPECTION**

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

**CUTTING**

**LENGTH OR DIAMETER**

**All Plates, Rectangular or Otherwise**

| | |
|---|---|
| Five feet and over up to published limit of length, but not over 80 feet | No extra |
| Under 5 feet to 3 feet inclusive | .10c |
| Under 3 feet to 2 feet inclusive | .25c |
| Under 2 feet to 1 foot inclusive | .50c |
| Under 1 foot | 1.55c |
| Over 80 feet to 100 feet inclusive | .10c |

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

**Regular Sketches**

With not more than four straight cuts (Including straight taper plates)

Additional extra ..... .10c

**Irregular Sketches**

With not more than four straight cuts. (Sketches cannot be sheared with re-entrant angles)

Additional extra ..... .20c

# *He who leans on Washington, D. C. leans on a rubber cane

*By* THEODORE F. MACMANUS
*President*, MACMANUS INCORPORATED
DETROIT

Business is only going to be good next year for those who make it good.

Sales will not be poured out of a cornucopia into the laps of the undeserving.

They will be squeezed out of a tough tube a sale at a time.

Leaning on Washington, D. C.—not necessarily the Washington of this moment but any Washington at any time—is like leaning on a rubber cane.

Of all the great aids given to business by government, the greatest in all probability are the tariff and a sound money system.

But the surest way for any business to get the greatest good even out of these twin aids is to proceed as though they did not exist—as though the business did not derive a dollar's worth of benefit from them—as though its ultimate net profit depended entirely upon individual initiative and intelligent advertising.

Paternalism of bureaucratic aid is the rubber cane of Business.

Sane, sensible advertising is its strong right arm.

There is nothing vitally wrong with business but quite a good deal that is wrong with its management.

For instance, if the automobile business became top heavy in recent times, it was partly due to the fact that it was overweighted with swollen heads and swollen fortunes.

All of the Motor Companies had and have huge markets but what they wanted was not a huge market but a hog market.

Perhaps the worst feature of the recent upset is the fact that it gives guilty managements and feeble executives one more opportunity to enter an alibi.

Scores of busy little first, second and third vice-presidents, sales and assistant sales managers and profoundly wise advertising men are once more running around in a frenzied circle, explaining volubly that it was not their business which went wrong, but General Business.

Now they are clamoring for luncheons and banquets and pep meetings and sales conventions.

What is actually needed is not nearly so much a housewarming as in many, many cases a house-cleaning.

All branches of business could benefit by it and advertising perhaps most of all because advertising has been willroger-ing all over the premises for the past ten years.

During the ten or more years of our riotous prosperity, someone forgot to batten down the business booby-hatch and a number of the inmates escaped and climbed to high managerial places while no one was looking.

It is time for the Boastful Boys and the Braggadocia Brothers and the Smart and Fox Families to retire to deserved obscurity.

It is high time to stop taking ourselves seriously and begin to take Business seriously.

Advertising actually has a mission.

That mission has to do with people.

Its object is to inspire people with confidence—as a preliminary to selling them something with which they will be pleased.

To do this requires a great deal more than a master's degree in English.

It implies an understanding of the human animal, the social fabric, the business structure of the nation and the world, and—super-added to all of these—a wizardry of words and a gift of implication and suggestion greater even than the greatest power of outright statement.

Advertising is the word and the mouth, the literature and the voice of Business—and Business is the one great public heroism which is left to most of us in this work-a-day world.

It behooves business for 1930 to look to itself—and especially to look to its advertising with a microscopic eye of critical and appraising examination.

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# "Where-To-Buy"

A classified by-products list of advertisers for the convenience of readers. If you don't find what you want, write us and we will tell you where to get it. ¶Index to advertisements will give you page number of any advertisers and by referring to advertisement you can get full particulars about products.

**ABRASIVES (Polishing)**
Carborundum Co., The, Niagara Falls, N. Y.
Norton Co., Worcester, Mass.

**ACCUMULATORS**
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

**ACETYLENE (Dissolved)**
Air Reduction Sales Co., 342 Madison Ave., New York City.
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

**ACETYLENE GENERATORS**
Air Reduction Sales Co., 342 Madison Ave., New York City.
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**ACETYLENE IN CYLINDERS**
Air Reduction Sales Co., 342 Madison Ave., New York City.
International Oxygen Co., Newark, N. J.
Prest-O-Lite Co., The, 30 E. 42nd St., New York City.

**ACIDS (Pickling)**
American Chemical Paint Co., Ambler, Pa.

**ADAMITE ROLLS**
American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.

**AIR COMPRESSORS — See COMPRESSORS (Air)**

**ALLOYS**
Driver-Harris Co., Harrison, N. J.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

**ALLOYS (Steel)**
Happenstall Co., 46th & A. V. R. R., Pittsburgh, Pa.

**ALLOYS (Vanadium)**
Vanadium Corp. of America, 120 Broadway, New York City.

**ALUMINUM (Tubing)**
Summerill Tubing Co., Bridgeport, Pa.

**ALUMINUM BRONZE (Acid Resisting)**
Duriron Co., Inc., The, Dayton, Ohio.

**ANGLES, TEES, CHANNELS—See STEEL (Structural)**

**ANNEALING BOXES**
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Petroleum Iron Works Co., The, Sharon, Pa.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

**ANVILS (Cast Steel)**
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

**APPRAISALS**
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

**ARCHES (Suspended)**
Detrick, M. H., Co., 140 S. Dearborn St., Chicago, Ill.

**ARCHITECTS (Industrial)**
Austin Co., The, 16112 Euclid Ave., Cleveland, O.

**AXLES**
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.

**BABBITT METAL**
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.
Williams Alloy Products Co., The, Elyria, Ohio.

**BALING PRESSES**
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.

**BANDS (Iron and Steel)**
Bethlehem Steel Co., Bethlehem, Pa.

**BANDS AND HOOPS (Galvanized Strips)**
Sharon Steel Hoop Co., Sharon, Pa.

**BAR BENDERS**
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.

**BARGES (Steel)**
American Bridge Co., 71 Broadway, New York City.

**BARS (Alloy)**
Central Alloy Steel Corp., Massillon, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.

**BARS (Concrete Reinforcing)**
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Laclede Steel Co., Arcade Bldg., St. Louis, Mo.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.

**BARS (Iron)—See IRON (Bar)**

**BARS (Steel)**
Bethlehem Steel Co., Bethlehem, Pa.
Bliss & Laughlin, Inc., Harvey, Ill.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Franklin Steel Works, Franklin, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh.
Pacific Coast Steel Co., Hunter-Dulin Bldg., San Francisco.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Tennessee Coal, Iron & Railroad Co., 1351 Brown-Marx Bldg., Birmingham, Ala.
Timken Roller Bearing Co., The, Canton, O.
Youngstown Sheet & Tube Co., Youngstown, O.

**BEAMS, CHANNELS, ANGLES ETC.**
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh.
Phoenix Iron Co., The, 20 So. 15th St., Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.

**BEARING METAL**
Williams Alloy Products Co., The, Elyria, Ohio.

**BEARINGS (Ball)**
Norma-Hoffmann Bearings Corp., Stamford, Conn.

**BEARINGS (Journal)**
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y.
Hyatt Roller Bearing Co., Harrison, N. J.
Timken Roller Bearing Co., The, Canton, O.
Williams Alloy Products Co., The, Elyria, Ohio.

**BEARINGS (Motor)**
Hyatt Roller Bearing Co., Harrison, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.

**BEARINGS (Roller)**
Hyatt Roller Bearing Co., Harrison, N. J.
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Roller Bearing Corp. of America, Trenton, N. J.

**BEARINGS (Tapered Roller)**
Williams Alloy Products Co., The, Canton, O.

**BEARINGS (Thrust)**
Norma-Hoffmann Bearings Corp., Stamford, Conn.
Timken Roller Bearing Co., The, Canton, O.

**BEARINGS AND BUSHINGS (Brass and Bronze)**
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y.
Erie Bronze Co., 402 W. 19th St., Erie, Pa.
Williams Alloy Products Co., The, Elyria, Ohio.

**BENDING AND STRAIGHTENING MACHINES**
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Hinman, D. A., & Co., Sandwich, Ill.
Kardong Bros., 346 Buchanan St., Minneapolis, Minn.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

**BENZOL AND TOLUOL RECOVERY PLANTS**
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

**BILLET PEELERS**
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.

**BILLETS (Alloy and Carbon Steel)**
Central Alloy Steel Corp., Massillon, O.
Washburn Wire Co., Phillipsdale, R. I.

**BILLETS (Forging)**
Alan Wood Steel Co., Conshohocken, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Central Alloy Steel Corp., Massillon, O.
Erie Forge Co., Erie, Pa.
Heppenstall Co., 47th and Hatfield, Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.

**BILLETS (Forging, Alloy Steel)**
Bethlehem Steel Co., Bethlehem, Pa.

**BILLETS AND BLOOMS**
Alan Wood Steel Co., Conshohocken, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Illinois Steel Co., 208 South La Salle St., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago.

**BILLETS AND SLABS**
Hausman & Wimmer Co., The, Clark Bldg., Pittsburgh, Pa.

**BLAST FURNACE SPECIALTIES**
Bailey, Wm. M., Co., Magee Bldg., Pittsburgh, Pa.
Brosius, Edgar E., Inc., Sharpsburg P. O., Pittsburgh, Pa.

**BLAST FURNACES — See FURNACES (Blast)**

**BLOWERS**
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.
Strong, Carlisle & Hammond Co., 1392 W. 3rd St., Cleveland, Ohio.

**BLOW PIPES (Brazing, Welding Cutting, Etc.)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**BOILER HEADS**
Bethlehem Steel Co., Bethlehem, Pa.

**BOILER SETTINGS & CHIMNEYS**
Detrick, M. H., Co., 140 S. Dearborn St., Chicago, Ill.
Rust Engineering Co., 2600 Koppers Bldg., Pittsburgh.

**BOILER TUBES—See TUBES (Boiler)**

**See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above**

## OTHER PRODUCTS

Automobile Frame Steel
Disc Wheel Steel
Cooperage Hoop Steel
Deep Drawing and Stamping Steel
Buck Steel
Tack and Nail Plate
Small Special Sections
Pillar Post Stock
Fender Stock
Copper Bearing Steels

# SHARON STEEL HOOP COMPANY

SHARON PENNSYLVANIA

WORKS:

YOUNGSTOWN, O. SHARON, PA. LOWELLVILLE, O.

DISTRICT SALES OFFICES

CHICAGO.....McCORMICK BLDG.
CINCINNATI.....UNION TRUST BLDG.
CLEVELAND.....UNION TRUST BLDG.
DETROIT...GENERAL MOTORS BLDG.
NEW YORK....CANADIAN PAC. BLDG.
PHILADELPHIA.....PACKARD BLDG.
SAN FRANCISCO..MONADNOCK BLDG
SHARON.....STEEL HOOP BLDG.
ST. LOUIS.....PLANTERS BLDG.

CANADIAN REPRESENTATIVES

HUGH RUSSEL & SONS, LTD.....TORONTO, EXCELSIOR LIFE BLDG.....MONTREAL, ROYAL INSURANCE BLDG.

**BOILERS**

Babcock & Wilcox Co., The, 85 Liberty St., New York City.
Combustion Engineering Corp., 200 Madison Ave., New York City.

**BOLT AND NUT MACHINERY**

Landis Machine Co., Waynesboro, Pa.

**BOLTS**

Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Milldale, Conn.
Foster Bolt & Nut Mfg. Co., Union Ave. at E. 72nd St., Cleveland, O.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Kirk-Latty Co., 1971 W. 85th St., Cleveland, O.
Lake Erie Bolt & Nut Co., 915 E. 63rd St., Cleveland, O.
Lamson & Sessions Co., The, 2188 Scranton Rd., Cleveland, O.
Neely Nut & Bolt Co., 2101 Wharton St., Pittsburgh.
Oliver Iron & Steel Corp., S. 10th and Muriel Sts., Pittsburgh.
Pittsburgh Screw & Bolt Co., Preble Ave., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, Ohio.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell St., Chicago.
Wrought Iron Co. of America, Lebanon, Pa.

**BOOKS (Technical)**

Penton Publishing Co., Cleveland, O.

**BOXES (Carbonizing)**

Driver-Harris Co., Harrison, N. J.
Farrell-Cheek Steel Foundry Co., Sandusky, O.

**BOXES (Open Hearth Charging)**

Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.

**BRAKES (Crane)**

Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland.

**BRAKES (Electric)**

Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Cutler-Hammer Inc., Milwaukee.
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.

**BRICK (Insulating) — See INSULATING BRICK**

**BRICK (Refractory) — See REFRACTORIES**

**BRIDGE CRANES (Ore and Coal Handling)**

Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

**BRIDGES, BUILDINGS, VIADUCTS, STACKS (Steel)**

American Bridge Co., 71 Broadway, New York City.
Belmont Iron Works, 22nd and Washington Ave., Philadelphia.
Eichleay, John, Jr., Co., S. 20th and Wharton, Pittsburgh, Pa.
McClintic-Marshall Co., Oliver Bldg., Pittsburgh, Pa.
Morgan Engineering Co., Alliance, Ohio.
Phoenix Bridge Co., 20 S. 15th St., Philadelphia, Pa.
Truscon Steel Co., Youngstown, O.

**BRONZE (Centrifugally Cast)**

Shenango-Penn Mold Co., Oliver Bldg., Pittsburgh, Pa.

**BRONZE (Manganese)**

Bethlehem Steel Co., Bethlehem, Pa.

**BUCKETS (Clam Shell, Dragline, Grab, Single Line)**

Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh.
Brosius, Edgar E., Inc., Sharpsburg, P. O., Pittsburgh, Pa.
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland.
Milwaukee Electric Crane & Hoist Corp., 60th & Greenfield Ave., Milwaukee, Wis.
Owen Bucket Co., The, 6013 Breakwater Ave., Cleveland.
Williams, G. H., Co., 611 Haybarger Lane, Erie, Pa.

**BUCKETS (Dumping)**

Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

**BUCKETS (Elevator)**

Hendrick Mfg. Co., 48 Dundaff St., Carbondale, Pa.

**BUILDINGS (Industrial)**

Austin Co., The, 16112 Euclid Ave., Cleveland, O.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

**BUILDINGS (Steel)—See BRIDGES, BUILDINGS, VIADUCTS, STACKS (Steel)**

**BULLDOZERS**

Beatty Machine & Mfg. Co., Hammond, Ind.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Long & Allstatter Co., Hamilton, O.

**BURNERS (Acetylene) — See TORCHES AND BLOWERS (Acetylene, Blow, Oxy-Acetylene)**

**BURNERS (Automatically Regulated)**

American Heat Economy Bureau, Inc., Wabash Bldg., Pittsburgh.

**BURNERS (Fuel, Oil, Gas, Combination)**

Babcock & Wilcox Co., 85 Liberty St., New York City.
Maehler, Paul, Co., The, 2210 West Lake St., Chicago, Ill.
Strong, Carlisle & Hammond Co., The, 1392 W. 3rd St., Cleveland.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

**BY-PRODUCT PLANTS**

Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

**CAN MAKING MACHINERY**

Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.

**CAP SCREWS —See SCREWS (Cap and Set)**

**CARBON BURNING APPARATUS**

Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**CAR DUMPERS**

Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

**CARS (Industrial and Mining)**

Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Bethlehem Steel Co., Bethlehem, Pa.

**CARS (Ingot and Open Hearth Charging)**

Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.

**CASTINGS (Acid Resisting)**

Duriron Co., Inc., The, Dayton, Ohio.

**CASTINGS (Acid Resisting—Brass, Bronze and Aluminum)**

Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.

**CASTINGS—Alloy (Acid Resisting)**

National Alloy Steel Co., Blawnox, Pa.

**CASTINGS (Alloy Steel)**

Alloy Cast Steel Co., The, Marion, Ohio.
Babcock & Wilcox Tube Co., 85 Liberty St., New York City.
Bethlehem Steel Co., Bethlehem, Pa.
Chicago Steel Foundry Co., 3720 S. Kedzie Ave., Chicago, Ill.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Industrial Steel Castings Co., Toledo, O.
Sivyer Steel Casting Co., Milwaukee, Wis.
Treadwell Engineering Co., Easton, Pa.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.

**CASTINGS (Bessemer Iron)**

Valley Mould & Iron Corp., Hubbard, Ohio.

**CASTINGS (Brass, Bronze, Copper, Aluminum)**

Bethlehem Steel Co., Bethlehem, Pa.
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y.
Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh.
Enterprise Brass Works, Muskegon, Mich.
Erie Bronze Co., 402 W. 19th St., Erie, Pa.
General Bronze Co., 3216 Smallman St., Pittsburgh.

**CASTINGS (Die) See DIE CASTINGS**

**CASTINGS (Electric Flux)**

Alloy Cast Steel Co., The, Marion, Ohio.

**CASTINGS (Electric Steel)**

American Rolling Mill Co., Middletown, O.
Chicago Steel Foundry Co. 3720 S. Kedzie Ave., Chicago, Ill.
Crucible Steel Castings Co., The, Almira and W. 84th St., Cleveland, O.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Industrial Steel Castings Co., Toledo, O.
Maynard Electric Steel Castings Co., 2-12 Kilbourn Rd., Milwaukee, Wis.
Pittsburgh Electric Furnace Corp., P. O. Box 1125, Pittsburgh, Pa.
Sivyer Steel Castings Co., Milwaukee, Wis.
West Steel Castings Co., The, 805 E. 70th St., Cleveland, O.

**CASTINGS (Gray Iron)**

Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Cascade Foundry Co., 19th and Plum Sts., Erie, Pa.
Forest City-Walworth Run Foundries, W. 27th & Nickel Plate R. R., Cleveland, Ohio.
Lake Shore Engine Works, Marquette, Mich.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.

**CASTINGS (Heat Resisting)**

Driver-Harris Co., Harrison, N. J.
National Alloy Steel Co., Blawnox, Pa.
Southern Manganese Steel Co., St. Louis, Mo.

**CASTINGS (Malleable)**

Iowa Malleable Iron Co., Fairfield, Iowa.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
Meeker Foundry Co., Clay & Ogden Sts., Newark, N. J.
Peoria Malleable Castings Co., Peoria, Ill.
Vermilion Malleable Iron Co., Hoopeston, Ill.

**CASTINGS (Manganese Steel)**

Alloy Cast Steel Co., The, Marion, Ohio.
American Manganese Steel Co., Chicago Heights, Ill.

**CASTINGS (Nickel Chromium)**

Alloy Cast Steel Co., The, Marion, Ohio.
Chicago Steel Foundry Co., 3720 S. Kedzie Ave., Chicago, Ill.
Driver-Harris Co., Harrison, N. J.
Southern Manganese Steel Co., St. Louis, Mo.

**CASTINGS (Steel)**

Alloy Cast Steel Co., The, Marion, Ohio.
American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.
American Rolling Mill Co., Middletown, O.
American Steel Foundries, 410 No. Michigan Ave., Chicago, Ill.
Atlas Steel Casting Co., 1963 Elmwood Ave., Buffalo, N. Y.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Chicago Steel Foundry Co., 3720 S. Kedzie Ave., Chicago, Ill.
Commercial Steel Castings Co., The, Marion, O.
Crucible Steel Castings Co., The, Almira and W. 84th St., Cleveland, O.
Duquesne Steel Foundry Co., Union Bank Bldg., Pittsburgh.
Erie Forge Co., Erie, Pa.
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Industrial Steel Castings Co., Toledo, O.
Mackintosh-Hemphill Co., Penn Ave. at Water St., Pittsburgh, Pa.
Maynard Electric Steel Castings Co., 2-12 Kilbourn Rd., Milwaukee, Wis.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
National Roll & Foundry Co., The, Avonmore, Pa.
Reliance Steel Casting Co., 28th & Smallman Sts., Pittsburgh,
Sivyer Steel Casting Co., Milwaukee, Wis.
Smith, George H., Steel Casting Co., Milwaukee, Wis.
Strong Steel Foundry Co., 33 Norris St., Buffalo, N. Y.
Treadwell Engineering Co., Easton, Pa.
Union Steel Casting Co., 62nd and Butler Sts., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.
West Steel Castings Co., The, 805 E. 70th St., Cleveland, O.

**CASTINGS (Worm & Gear Bronze)**

Cadman, A. W., Mfg. Co., 2816 Smallman St., Pittsburgh, Pa.

**CASTORS (Plate Mills)—See PLATE CASTORS**

**CEMENT (High Temperature)**

Carborundum Co., The, Perth Amboy, N. J.
General Refractories Co., 106 S. 16th St., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bk. Bldg., Pittsburgh.
North American Refractories Co., 1012 National City Bank, Cleveland, Ohio.

**CEMENT MACHINERY**

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

**CENTRAL STATION EQUIPMENT**

Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

**CHAIN-MAKING MACHINERY**

Nilson, A. H., Machine Co., Bridgeport, Conn.

**CHAINS (For Drives, Conveyors & Elevators)**

Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.

**CHARCOAL**

Hillman Coal & Coke Co., First Nat. Bk. Bldg., Pittsburgh.

**CHARGING MACHINES (Cupola)**

Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

**CHEMICALS**

Ford, The J. B., Co., Wyandotte, Mich.

**CHROME ORE**

General Refractories Co., 106 S. 16th St., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bk. Bldg., Pittsburgh.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

**CHROMIUM METAL**

Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

**CHUCKING MACHINES (Automatic, Multiple Spindle)**

National Acme Co., E. 131st St. and Coit Rd., Cleveland, O.

**CLAY GUNS (Electric)**

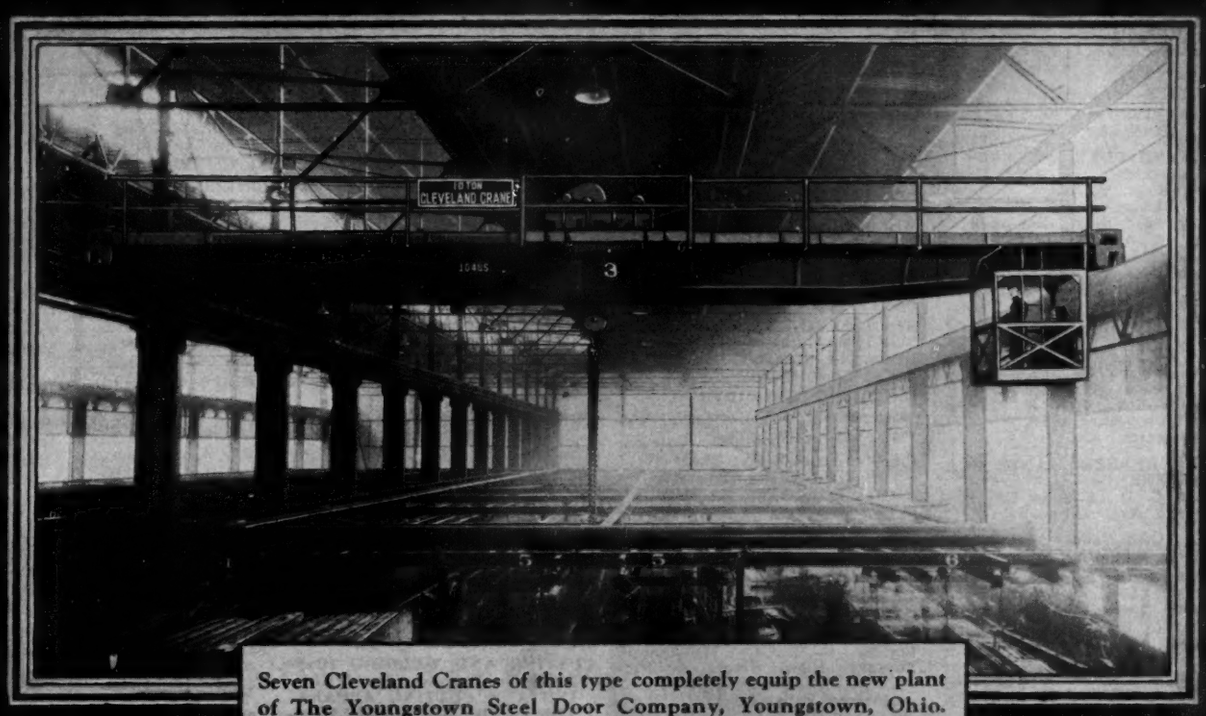
Bailey, Wm. M., Co., Magee Bldg., Pittsburgh, Pa.

**CLEANERS Metal)—See METAL CLEANERS**

**CLEANING SPECIALTIES**

American Chemical Paint Co., Ambler, Pa.
Ford, The J. B., Co., Wyandotte, Mich.

**See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above**

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559 Railway Exchange Building
Chicago, Illinois

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**CLUTCHES (Cut-Off Coupling)**
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

**CLUTCHES (Friction)**
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

**COAL AND COKE**
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Eaton, Rhodes & Co., First National Bank Bldg., Cincinnati, O.
Hanna, M. A., The, Co., Leader Bldg., Cleveland, O.
Hillman Coal & Coke Co., First Nat. Bk. Bldg., Pittsburgh.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.
Snyder, W. P., Co., Oliver Bldg., Pittsburgh, Pa.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.

**COAL CRUSHERS AND PULVERIZERS**
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.

**COAL, ORE and ASH HANDLING MACHINERY**
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
Webster and Weller Mfg. Co's., 1856 No. Kostner Ave., Chicago.

**COKE—See COAL AND COKE**

**COKE OVENS (By-Product)**
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh, Pa.

**COKE OVEN MACHINERY**
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.

**COKE QUENCHING SYSTEMS**
Dry Quenching Equipment Corp., 200 Madison Ave., New York.

**COMPENSATORS (Automatic)**
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland.

**COMPOUNDS (Metal Cleaning)**
Parkin, Wm. M., Co., 1005 Highland Bldg., Pittsburgh, Pa.

**COMPOUNDS (Pickling)**
Parkin, Wm. M., Co., 1005 Highland Bldg., Pittsburgh, Pa.

**COMPRESSORS Air)**
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
General Electric Co., Schenectady, N. Y.
Ingersoll-Rand Co., 11 Broadway, New York City.
Sullivan Machinery Co., 820 Wrigley Bldg., Chicago.

**COMPRESSORS (Portable)**
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.

**CONCRETE MIXERS—See MIXERS (Concrete)**

**CONCRETE REINFORCING BARS —See BARS (Concrete Reinforcing)**

**CONDENSERS (Surface, Barometric, Multi-Jet)**
Ingersoll-Rand Co., 11 Broadway, New York City.

**CONDUITS (Electric)**
Youngstown Sheet & Tube Co., Youngstown, O.

**CONSTRUCTION (Industrial Buildings)**
Austin Co., The, 16112 Euclid Ave., Cleveland, O.

**CONTRACTORS—See ENGINEERS AND CONTRACTORS**

**CONTROLLERS (Automatic)**
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland.

**CONTROLLERS (Electric)**
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Cutler-Hammer, Inc., Milwaukee.
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland, O.

**CONVEYORS (Elevating and Conveying)**
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.
Whiting Corp., Harvey, Ill.

**COTTER PINS**
Hindley Mfg. Co., John St., Valley Falls, R. I.

**COTTERS**
Kirk-Latty Co., 1971 W. 85th St., Cleveland, O.
Lamson & Sessions Co., The, 2188 Scranton Rd., Cleveland, O.

**COUNTING MACHINES**
Veeder-Root, Inc., Hartford, Conn.

**COUPLINGS (Flexible)**
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.

**CRANES**
Bedford Foundry & Machine Co., Bedford, Ind.
Conkey, H. D., Co., Mendota, Ill.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

**CRANES (Charging)**
Alliance Machine Co., The, Alliance, O.
Morgan Engineering Co., Alliance, O.

**CRANES (Creeper, Erection)**
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland, O.
Link-Belt Co., 300 W. Pershing Rd., Chicago, Ill.

**CRANES (Electric)**
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Northern Engineering Works, 210 Chene St., Detroit, Mich.

**CRANES (Electric Traveling)**
Alliance Machine Co., The, Alliance, O.
Box Crane & Hoist Corp., Janney & E. Ontario Sts., Philadelphia.
Cleveland Crane & Engrg. Co., The, Wickliffe, O.
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Milwaukee Electric Crane & Hoist Corp., 60th & Greenfield Ave., Milwaukee, Wis.
Morgan Engineering Co., The, Alliance, O.
Northern Engineering Works, 210 Chene St., Detroit, Mich.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.
Whiting Corp., Harvey, Ill.

**CRANES (Gantry)**
Bedford Foundry & Machine Co., Bedford, Ind.
Cleveland Crane & Engineering Co., The, Wickliffe, O.
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

**CRANES (Hand)**
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.
Roeper Crane & Hoist Works, 1729 No. 10th St., Reading, Pa.

**CRANES (Hand Traveling)**
Box Crane & Hoist Corp., Janney and E. Ontario Sts., Philadelphia.
Milwaukee Electric Crane & Hoist Corp., 60th & Greenfield Ave., Milwaukee, Wis.
Whiting Corp., Harvey, Ill.

**CRANES (Hydraulic)**
Alliance Machine Co., The, Alliance, O.

**CRANES (Jib)**
Box Crane & Hoist Corp., Janney & E. Ontario Sts., Philadelphia.
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.

**CRANES (Locomotive)**
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland.

**CRANES (Overhead)**
Milwaukee Electric Crane & Hoist Corp., 60th & Greenfield Ave., Milwaukee, Wis.

**CRANES (Portable)**
Beatty Machine & Mfg. Co., Hammond, Ind.

**CRANK SHAFTS**
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland.

**CRUSHING, GRINDING AND PULVERIZING MACHINERY**
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Fuller Lehigh Co., Fullerton, Pa.
Morgan Engineering Co., Alliance, O.

**CUPOLA CHARGING MACHINES (Electric)**
Whiting Corp., Harvey, Ill.

**CUPOLAS**
Whiting Corp., Harvey, Ill.

**CUTTING AND WELDING (Oxy-Acetylene Process)—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)**

**CUTTING AND WELDING APPARATUS—See WELDING AND CUTTING APPARATUS (Electric Arc)**

**CUTTING OILS**
Sun Oil Co., 1608 Walnut St., Philadelphia, Pa.

**CYLINDERS (Acetylene) — See ACETYLENE IN CYLINDERS**

**CYLINDERS (Oxygen) See OXYGEN IN CYLINDERS**

**CYLINDERS (Pressure)**
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Scaife, Wm. B., & Sons Co., Oakmont, Pa.

**DECARBONIZING APPARATUS**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**DEOXIDIZERS**
Titanium Alloy Mfg. Co., The, Niagara Falls, N. Y.
Vanadium Corp. of America, 120 Broadway, New York City.

**DIE BLOCKS**
Bethlehem Steel Co., Bethlehem, Pa.
Heppenstall Co., 47th and Hatfield, Pittsburgh, Pa.

**DIE CASTINGS**
Allied Die-Casting Corp., Honeywell St. & Skillman Ave., Long Island City, N. Y.
Newton Die Casting Corp., 146 Munson St., New Haven, Conn.
Stewart Die Casting Corp., 4535 Fullerton Ave., Chicago, Ill.

**DIE HEADS (Automatic)**
Landis Machine Co., Waynesboro, Pa.
National Acme Co., E. 131st St. and Colt Rd., Cleveland.

**DIE STEEL**
Heppenstall Co., 47th and Hatfield, Pittsburgh.

**DIES**
Bethlehem Steel Co., Bethlehem, Pa.
Niagara Machine & Tool Works, 685 Northland Ave., Buffalo, N. Y.
Toledo Machine & Tool Co., Toledo, O.

**DOLOMITE MACHINES (Back Wall)**
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

**DOORS AND SHUTTERS (Steel, Fire and Rolling)**
Kinnear Mfg. Co., 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.
Truscon Steel Co. (Pressed Steel Div.), Youngstown, O.

**DRAW BENCHES**
Vaughn Machinery Corp., Cuyahoga Falls, O.

**DRILL RODS—See RODS (Drill)**

**DRILLING MACHINES (Multiple, Heavy Duty)**
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

**DRILLING MACHINES (Radial)**
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

**DRILLS (Electric)**
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago.

**DRILLS (Pneumatic)**
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Independent Pneumatic Tool Co., 228 S. Jefferson St., Chicago.
Ingersoll-Rand Co., 11 Broadway, New York City.

**DRILLS (Rock)**
Ingersoll-Rand Co., 11 Broadway, New York City.

**DRILLS (Twist)**
Cleveland Twist Drill Co., 1242 E. 49th St., Cleveland, O.

**DRIVES (Cut Herringbone Gears)**
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham, Co., Inc., 344 Vulcan St., Buffalo, N. Y.
Lewis Foundry & Machine Co., Pittsburgh, Pa.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.

**DRYERS (Paint, Varnish, Enamel, Chemical)**
Drying Systems, Inc., 1814 Foster Ave., Chicago, Ill.
Maehler, Paul, Co., The, 2210 West Lake St., Chicago, Ill.

**DRYERS (Sand, Coal, Ores, Chemical, Etc.)**
Bartlett, C. O. & Snow Co., 6203 Harvard Ave., Cleveland, O.

**DUST COLLECTING EQUIPMENT**
Pangborn Corp., P. O. Box 858, Hagerstown, Md.
Whiting Corp., Harvey, Ill.

**ECONOMIZERS**
Babcock & Wilcox Co., 85 Liberty St., New York City.

**ELECTRICAL EQIUPMENT**
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago.

**ELECTRIC TOOLS (Portable) — See TOOLS (Portable Electric)**

**ELEVATING AND CONVEYING MACHINERY — See CONVEYORS (Elevating and Conveying)**

**ELEVATORS (Bucket)**
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Link-Belt Co., 300 W. Pershing Road, Chicago.

**ENGINE LATHES—See LATHES (Engine)**

**ENGINEERS AND CONTRACTORS**
Austin Co., The, 16112 Euclid Ave., Cleveland, O.
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh.
Kennedy, Julian, Bessemer Bldg., Pittsburgh, Pa.
Laughlin, Alex, & Co., First National Bank Bldg., Pittsburgh.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Pennsylvania Engineering Works, New Castle, Pa.
Phoenix Bridge Co., 20 South 15th St., Philadelphia, Pa.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

**See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above**

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**ENGINEERS AND CONTRACTORS —(Cont.)**
Swindell, Wm., & Bros., P. O. Box 1753, Pittsburgh, Pa.
Wean Engineering Co., Inc., The, 2nd Nat. Bank Bldg., Warren, O.

**ENGINEERS (Consulting)**
Austin Co., The, 16112 Euclid Ave., Cleveland, O.
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Freyn Engineering Co., 310 S. Michigan Ave., Chicago.
Kennedy, Julian, Bessemer Bldg., Pittsburgh, Pa.
McKee, Arthur G, & Co., 2422 Euclid Ave., Cleveland, O.
Perin & Marshall, 11 West 42nd St., New York City.
Riehle Bros., Testing Machine Co., 1424 N. 9th St., Philadelphia.
Shover, Barton R., Oliver Bldg., Pittsburgh, Pa.
Townsend, Earl D., Federal Title & Trust Bldg., Beaver Falls, Pa.
Worthington, Warren, Oliver Bldg., Pittsburgh, Pa.

**ENGINEERS, CONSULTING (By-Product Coke Oven and Gas Plants)**
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

**ENGINES (Gas, Oil)**
Fairbanks, Morse & Co., 900 S. Wabash St., Chicago.
Ingersoll-Rand Co., 11 Broadway, New York City.

**FACING BLOCKS**
Mummert-Dixon Co., Hanover, Pa.

**FACING MACHINES (Structural)**
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

**FACTORY AND INDUSTRIAL BUILDINGS — See BRIDGES, BUILDING, VIADUCTS, STACKS (Steel)**

**FACTORY EQUIPMENT (Steel) —See STOOLS AND FACTORY EQUIPMENT (Steel)**

**FANS (Portable)**
Perkins, B. F., & Son, Inc., Holyoke, Mass.

**FERROALLOYS**
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Metal & Thermit Corp., 120 Broadway, New York City.
Vanadium Corp. of America, 120 Broadway, New York City.

**FERROCARBON TITANIUM**
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

**FERROCHROME**
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Vanadium Corp. of America, 120 Broadway, New York City.

**FERROMANGANESE**
Electro Metallurgical Sales Corp., 30 E 42nd St., New York City.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

**FERROPHOSPHORUS**
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.

**FERROSILICON**
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Globe Iron Co., Jackson, Mich.
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.
Vanadium Corp. of America, 120 Broadway, New York City.

**FERROSILICON (Aluminum)**
Vanadium Corp. of America, 120 Broadway, New York City.

**FERROTUNGSTEN**
Vanadium Corp. of America, 120 Broadway, New York City.

**FERROVANADIUM**
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.
Vanadium Corp. of America, 120 Broadway, New York City.

**FERRULES**
Bay State Stamping Co., 380 Chandler St., Worcester, Mass.

**FIRE BRICK**
Evens & Howard Fire Birck Co., 920 Market St., St. Louis, Mo.

**FIRE CLAY**
Babcock & Wilcox Co., 85 Liberty St., New York City.
Climax Fire Brick Co., Climax, Pa.
Eureka Fire Brick Works, First National Bank Bldg., Pittsburgh.
General Refractories Co., 106 S. 16th St., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh.
Kier Fire Brick Co., Oliver Bldg., Pittsburgh, Pa.
Laclede-Christy Clay Products Co., Ambassador Bldg., St. Louis, Mo.
North American Refractories Co., 1012 Nat. City Bank, Cleveland.
Stowe Fuller Refractories Co., 1650 Union Trust Bldg., Cleveland.
Taylor, Chas., Sons Co., The, Burns St., Cincinnati, Ohio.
U. S. Refractories Corp., Mt. Union, Pa.

**FIRE DOORS AND SHUTTERS**
Kinnear Mfg. Co., The, 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

**FLASKS (Foundry)**
Truscon Steel Co., Youngstown, O.

**FLOOR ARMORING**
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

**FLOORING—STEEL (Ventilating, Nonslipping, Fireproof)**
Alan Wood Steel Co., Conshohocken, Pa.
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

**FLOOR PLATES—See PLATES (Rolled Steel—Floor)**

**FLUORSPAR**
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.

**FLUX (Welding)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**FORGING BILLETS — See BILLETS (Alloy and Carbon Steel)**

**FORGING BILLETS—See BILLETS (Forging)**

**FORGING FURNACES**
Chapman-Stein Co., The, Mt. Vernon, Ohio.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

**FORGING MACHINERY**
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.

**FORGINGS (Brass, Bronze and Copper)**
American Brass Co., 25 Broadway, New York.
Storms Drop Forging Co., Springfield, Mass.

**FORGINGS (Drop)**
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Canton Forge & Axle Co., 2001-2037 Dueber Ave., Canton, O.
Champion Machine & Forging Co., 3675 E. 78th St., Cleveland, O.
Drop Forging Co. of New York, 324 West Side Ave., Jersey City, N. J.
Fruin Drop Forge Co., 341-355 West Root St., Chicago, Ill.
National Lock Washer Co., 40 Hermon St., Newark, N. J.
Oliver Iron & Steel Corp., S. 10th and Muriel St., Pittsburgh.
Philadelphia Steel & Iron Co., Commercial Trust Bldg., Philadelphia, Pa.
Queen City Forging Co., The, 235 Tennyson St., Cincinnati, O.
Rockford Drop Forge Co., Rockford, Ill.
Steel Car Forge Co., 410 Frick Bldg., Pittsburgh, Pa.
Storms Drop Forge Co., Springfield, Mass.
Williams, J. H., & Co., 400 Vulcan St., Buffalo, N. Y.

**FORGINGS (Hollow Bored)**
Erie Forge Co., Erie, Pa.

**FORGINGS (Iron and Steel)**
Bay City Forge Co., Erie, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Drop Forging of New York, 324 West Side Ave., Jersey City, N. J.
Erie Forge Co., Erie, Pa.
Heppenstall Co., 47th and Hatfield, Pittsburgh.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
Philadelphia Steel & Iron Co., Commercial Trust Bldg., Philadelphia, Pa.
Pittsburgh Forge & Iron Co., 801 Chamber of Commerce Bldg., Pittsburgh, Pa.
Rockford Drop Forge Co., Rockford, Ill.
Steel Car Forge Co., 410 Frick Bldg., Pittsburgh, Pa.
Williams, J. H., & Co., 400 Vulcan St., Buffalo, N. Y.

**FORGINGS (Upset)**
Neely Nut & Bolt Co., 2101 Wharton St., Pittsburgh.

**FOUR-SLIDE MACHINES**
Nilson, A. H., Machine Co., Bridgeport, Conn.

**FROGS AND SWITCHES**
Bethlehem Steel Co., Bethlehem, Pa.

**FURNACE CONTROLS (Open Hearth)**
Morgan Construction Co., Worcester, Mass.

**FURNACE INSULATION**
Armstrong Cork & Insulation Co., Lancaster, Pa.

**FURNACES (Blast)**
Brassert, H. A., & Co., 310 So. Michigan Ave., Chicago, Ill.
Freyn Engineering Co., 310 S. Michigan Ave., Chicago.
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.
Pollock, William B., Co., The, Youngstown, Ohio.

**FURNACES (Continuous Pair)**
Hagan, Geo. J., Co., Chamber of Commerce Bldg., Pittsburgh.
Strong, Carlisle & Hammond Co., 1392 West 3rd St., Cleveland.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

**FURNACES (Electric)**
Electric Furnace Co., The, Wilson St. at P. R. R., Salem, Ohio.
Hevi Duty Electric Co., 4100 Highland Blvd., Milwaukee.
Strong, Carlisle & Hammond Co., 1392 W. 3rd St., Cleveland, O.
Swindell, Wm., & Brothers Co., P. O. Box 1753, Pittsburgh, Pa.
Westinghouse Electric & Mfg. Co., Mansfield, Ohio.

**FURNACES (Electric Melting)**
American Bridge Co., 71 Broadway, New York City.
General Electric Co., Schenectady, N. Y.
Hagan, Geo. J., Chamber of Commerce Bldg., Pittsburgh, Pa.
Pittsburgh Electric Furnace Corp., P. O. Box 1125, Pittsburgh.

**FURNACES (Open-Hearth)**
Criswell, James, Co., Keenan Bldg., Pittsburgh, Pa.
Incandescent Heat Co., Ltd., The, Cornwall Rd., Smethwick, Birmingham, Eng.
Laughlin, Alex & Co., First National Bank Bldg., Pittsburgh.

**FURNACES (Recuperative)**
Chapman-Stein Co., The, Mt. Vernon, Ohio.
Hagan, Geo. J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Incandescent Heat Co., Ltd., The, Cornwall Rd., Smethwick, Birmingham, Eng.

**FURNACES (Sheet and Tin Mill)**
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
Incandescent Heat Co., Ltd., The, Cornwall Rd., Smethwick, Birmingham, England.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.
Wean Engineering Co., Inc., The, 2nd Nat. Bank Bldg., Warren, O.

**FURNACES (Steel Mill)**
Chapman-Stein Co., Mt. Vernon, Ohio.
Morgan Construction Co., Worcester, Mass.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.

**FURNACES (Steel Treating, Annealing & Case Hardening)**
Carborundum Co., The, Perth Amboy, N. J.
Chapman-Stein Co., The, Mt. Vernon, Ohio.
Costello Engineering Co., 519 Oliver Bldg., Pittsburgh, Pa.
Electric Furnace Co., The, Wilson St. at P. R. R., Salem, O.
Hagan, Geo. J., Co., Chamber of Commerce Bldg., Pittsburgh, Pa.
Hevi Duty Electric Co., 4100 Highland Blvd., Milwaukee.
Rust Engineering Co., The, 2600 Koppers Bldg., Pittsburgh, Pa.
Strong, Carisle & Hammond Co., 1392 W. 3rd St., Cleveland, O.
Surface Combustion Co., 2375 Dorr St., Toledo, Ohio.
Westinghouse Electric & Mfg. Co., Mansfield, Ohio.

**GAGES (Welding)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**GALVANIZING**
Hanlon-Gregory Galvanizing Co., 5515 Butler St., Pittsburgh, Pa.

**GALVANIZING (Hot Dip)**
Hanlon-Gregory Galvanizing Co., 5515 Butler St., Pittsburgh, Pa.

**GALVANIZING PLANTS — FOR SHEETS**
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
Erie Foundry Co., Erie, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh
Wean Engineering Co., Inc., The, 2nd Nat. Bank Bldg., Warren, O.

**GAS (Welding and Cutting)**
Prest-O-Lite Co., Inc., The, 30 E. 42nd St., New York City.

**GAS METERS—See METERS (Gas and Air)**

**GASOLINE**
Texas Co., The, 17 Battery Place, New York City.

**GAS PRODUCER PLANTS**
Flinn & Dreffein Co., 308 W. Washington St., Chicago, Ill.
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.
Morgan Construction Co., Worcester, Mass.
Wellman-Seaver-Morgan Co., The, 7025 Central Ave., Cleveland, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

**GAS RECOVERY COKE OVEN AND GAS PLANTS**
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

**GEAR BLANKS**
Bethlehem Steel Co., Bethlehem, Pa.
Buffalo Bronze Die Cast Corp., 100 Arthur St., Buffalo, N. Y.

**GEAR GENERATORS**
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.

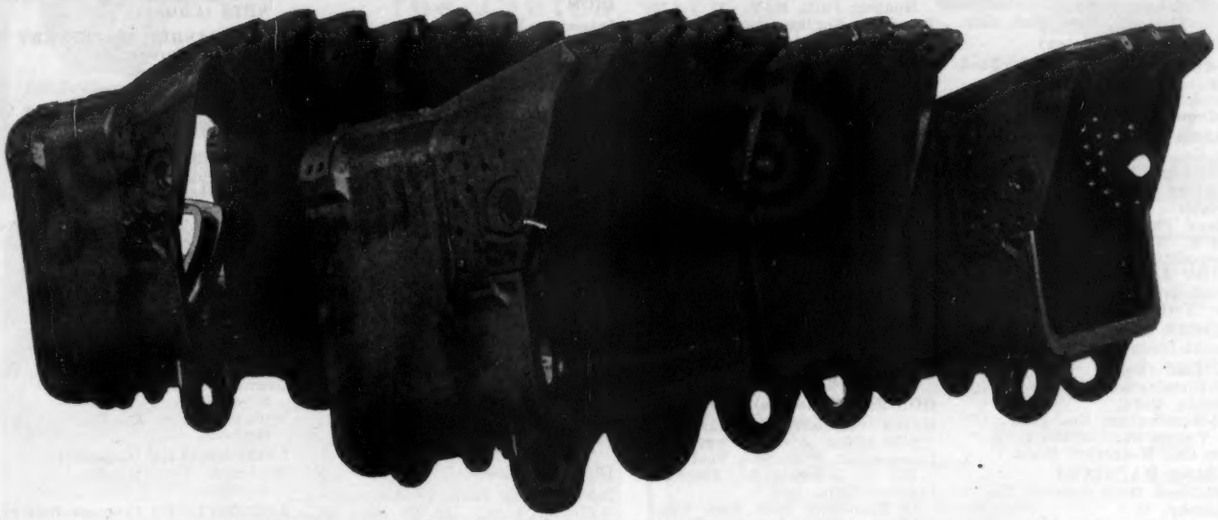
**GEARS (Reverse Marine)**
Johnson, Carlyle, Machine Co., The, Manchester, Conn.

**GEARS AND GEAR CUTTING**
American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.
Grant Gear Works, Second and B Sts., Boston, Mass.
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Mackintosh-Hemphill Co., Penn Ave. at Water St., Pittsburgh.
Simonds Mfg. Co., 25th St. and Liberty Ave., Pittsburgh, Pa.

**GENERATING SETS**
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
General Electric Co., Schenectady, N. Y.

**See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above**

# FARRELL'S 85



*Shipment of five shovel buckets. Each bucket consists of one piece shell, detachable lip with tooth stubs, detachable latch band, bushings and renewable tooth points. These are being made in their entirety of Farrell's 85 in both the 1 yd. and ¾ yd. sizes for a nationally prominent manufacturer of power shovels.*

## THE RIGHT STEEL FOR BUCKETS!

FARRELL'S 85 is now enabling shovel builders to offer a decidedly longer service life in the operation of their digging buckets. Tests have conclusively shown that it is a steel that will successfully resist breakage under the severest conditions in any type of digging. One shovel builder alone has expressed confidence in Farrell's 85 to the extent of equipping more than one hundred machines during the past ten months with buckets composed entirely of Farrell's 85 castings—with not one breakage reported.

It's the inherent toughness and strength of the steel that provides immunity to breakage—to which is added the desirable property of extreme resistance to wear and abrasion conditions.

**Farrell-Cheek Steel Foundry Company — Sandusky, Ohio.**

New York Office—25 Church Street
Birmingham Office—2124 Highland Avenue
Philadelphia Office—2401 Chestnut Street
Denver Office—1626 Detroit Street

# FARRELL-CHEEK

**GENERATORS (Acetylene) — See ACETYLENE GENERATORS**

**GENERATORS (Electric)**
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
General Electric Co., Schenectady, N. Y.
Lincoln Electric Co., The, Coit Rd. and Kirby Ave., Cleveland, O.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

**GLOVES (Asbestos)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**GOGGLES (Welding)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**GRATING (Non-Slipping)**
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.

**GREASES**
Texas Co., The, 17 Battery Place, New York City.

**GRINDERS (Electric-Pneumatic Portable)**
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago.
Ingersoll-Rand Co., 11 Broadway, New York City.

**GRINDERS (Radial)**
Mummert-Dixon Co., Hanover, Pa.

**GRINDERS (Roll)**
Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.
Norton Co., Worcester, Mass.

**GRINDING MACHINES**
Farrell-Cheek Steel Foundry Co., Sandusky, O.
Norton Co., Worcester, Mass.

**GRINDING PANS**
Phillips & McLaren Co., 24th & Smallman Sts., Pittsburgh, Pa.

**GRINDING WHEELS**
Carborundum Co., The, Niagara Falls, N. Y.
Norton Co., Worcester, Mass.

**GUARDS (Machinery)**
Breese Bros. Co., The, 2347 Reading Rd., Cincinnati, O.

**HAMMER RAMS**
Heppenstall Co., 47th & Hatfield, Pittsburgh, Pa.

**HAMMERS (Air)**
Nazel Engineering & Machine Works, 4100 W. 5th St., Philadelphia, Pa.

**HAMMERS (Board Drop)**
Erie Foundry Co., Erie, Pa.

**HAMMERS (Chipping, Riveting and Calking)**
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago, Ill.
Ingersoll-Rand Co., 11 Broadway, New York City.

**HAMMERS (Drop)**
Bliss, E. W., Co., 53rd and 2nd Ave., Brooklyn, N. Y.
Erie Foundry Co., Erie, Pa.
Morgan Engineering Co., Alliance, Ohio.
Toledo Machine & Tool Co., Toledo, O.

**HAMMERS (Forging)**
Nazel Engineering & Machine Works, 4100 W. 5th St., Philadelphia, Pa.

**HAMMERS (Power)**
Erie Foundry Co., Erie, Pa.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

**HAMMERS (Steam)**
Erie Foundry Co., Erie, Pa.
Morgan Engineering Co., Alliance, Ohio.

**HANGERS (Door)**
Myers, F. E., & Brothers Co., The, Ashland, Ohio.

**HANGERS (Shaft)**
Hyatt Roller Bearing Co., Harrison, N. J.

**HARDNESS TESTING MACHINES**
Shore Instrument & Mfg. Co., Van Wyck Ave. and Carll St., Jamaica, N. Y.

**HEATERS (Air)**
Babcock & Wilcox Co., 85 Liberty St., New York City.

**HEATERS (Electric Roll)**
Freyn Engineering Co., 310 S. Michigan Ave., Chicago.

**HEAT TREATING (Commercial)**
Lakeside Steel Improvement Co., 5418 Lakeside Ave., Cleveland.

**HOISTING MACHINERY**
Industrial Brownhoist Corp., 4403 St. Clair Ave., Cleveland, O.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.
Treadwell Engineering Co., Easton, Pa.

**HOISTS (Electric)**
Box Crane & Hoist Corp., Janney and Ontario Sts., Philadelphia.
Cleveland Electric Tramrail Division of the Cleveland Crane & Engineering Co., Wickliffe, O.
Harnishfeger Corp., 3811 National Ave., Milwaukee, Wis.
Milwaukee Electric Crane & Hoist Corp., 60th & Greenfield Ave., Milwaukee, Wis.
Reading Chain & Block Corp., 1729 No. 10th St., Reading, Pa.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave., Montour Falls, N. Y.

**HOISTS (Monorail)**
Milwaukee Electric Crane & Hoist Corp., 60th & Greenfield Ave., Milwaukee, Wis.

**HOISTS (Pneumatic)**
Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.
Independent Pneumatic Tool Co., 228 So. Jefferson St., Chicago.
Ingersoll-Rand Co., 11 Broadway, New York City.
Whiting Corp., Harvey, Ill.

**HOISTS (Portable)**
Sullivan Machinery Co., 820 Wrigley Bldg., Chicago, Ill.

**HOOPS AND BANDS**
Acme Steel Co., 2840 Archer Ave., Chicago, Ill.
Ryerson, Joseph T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Sharon Steel Hoop Co., Sharon, Pa.
West Leechburg Steel Co., Farmers Bk. Bldg., Pittsburgh.

**HOSE (Welding)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**HOT BEDS**
Treadwell Engineering Co., Easton, Pa.

**HOT BLAST STOVES**
McKee, Arthur G., & Co., 2422 Euclid Ave., Cleveland, O.

**HYDRANTS (Fire)**
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

**HYDRAULIC MACHINERY**
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Morgan Engineering Co., Alliance, Ohio.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia, Pa.

**HYDRAULIC PRESSES—See PRESSES (Hydraulic)**

**INGOT MOLDS**
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Shenango-Penn Mold Co., Oliver Bldg., Pittsburgh, Pa.
Valley Mould & Iron Corp., Hubbard, Ohio.

**INSTRUMENTS (Electric, Indicating and Recording)**
General Electric Co., Schenectady, N. Y.

**INSULATING BLOCK**
Armstrong Cork & Insulation Co., Lancaster, Pa.

**INSULATING BRICK**
Armstrong Cork & Insulation Co., Lancaster, Pa.
General Insulating & Mfg. Co., Alexandria, Ind.

**INSULATING POWDER AND CEMENT**
Armstrong Cork & Insulation Co., Lancaster, Pa.
General Insulating & Mfg. Co., Alexandria, Ind.

**INSULATION**
General Insulating & Mfg. Co., Alexandria, Ind.

**INSULATION (Furnace, Boiler Settings, Ovens, Steam Pipe, Etc.)**
Armstrong Cork & Insulation Co., Lancaster, Pa.

**IRON**
Interstate Iron & Steel Co., 104 S. Michigan Ave., Chicago.

**IRON (Bar)**
Bethlehem Steel Co., Bethlehem, Pa.
Burden Iron Co., The, Troy, N. Y.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Wrought Iron Co. of America, Lebanon, Pa.

**IRON (Chain)**
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Penn Iron & Steel Co., Creighton, Pa.

**IRON (Engine Bolt)**
Bethlehem Steel Co., Bethlehem, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Wrought Iron Co. of America, Lebanon, Pa.

**IRON (Rustless)**
Rustless Iron Corp. of America, Chanin Bldg., 122 E. 42nd St., New York City.

**IRON (Silvery)**
Globe Iron Co., Jackson, O.

**IRON (Stainless)**
Firth-Sterling Steel Co., McKeesport, Pa.

**IRON (Staybolt)**
Bethlehem Steel Co., Bethlehem, Pa.
Lockhart Iron & Steel Co., Pittsburgh, Pa.
Penn Iron & Steel Co., Creighton, Pa.
Wrought Iron Co. of America, Lebanon, Pa.

**IRON ORE**
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Hanna, The M. A., Co., Leader Bldg., Cleveland, O.
Hillman Coal & Coke Co., First Nat. Bank Bldg., Pittsburgh.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Quinn, Clement K., & Co., Duluth, Minn.

**KEROSENE**
Texas Co., The, 17 Battery Place, New York City.

**KEYS (Machine)**
Morton Mfg. Co., Muskegon, Mich.

**KEYWAY CUTTERS (Stationary and Portable)**
Morton Mfg. Co., Muskegon, Mich.

**KNIVES AND SHEAR BLADES —See SHEAR BLADES AND KNIVES**

**LATHES**
Manning, Maxwell & Moore, Inc., 100 E. 42nd St., New York City.
Ryerson, Jos., T., & Son, Inc., 16th and Rockwell Sts., Chicago.

**LATHES (Roll Turnings)**
Lewis Foundry & Machine Co., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

**LATHES (Vertical Turret)**
Bullard Co., The, Bridgeport, Conn.

**LATHE DOGS**
West Steel Casting Co., 805 E. 70th St., Cleveland, O.

**LEAD BURNING**
Lovsey, Charles H., Co., 704 Park Bldg., Pittsburgh, Pa.

**LEAD BURNERS APPARATUS (Oxy-Acetylene)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**LEAD POTS**
Farrell-Cheek Steel Foundry Co., Sandusky, O.

**LEVELING MACHINES**
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.
Wean Engineering Co., Inc., The, 2nd Nat. Bank Bldg., Warren, O.

**LIFTING MAGNETS—See MAGNETS (Lifting)**

**LOCK WASHER MACHINERY**
Sleeper & Hartley, Inc., Worcester, Mass.

**LOCK WASHERS**
American Nut & Bolt Fastener Co., The, 2029 Dover St., Pittsburgh.
Beall Tool Co., East Alton, Ill.
Mansfield Lock Washer Co., Mansfield, Ohio.
National Lock Washer Co., The, 40 Hermon St., Newark, N. J.
Positive Lock Washer Co., The, Ave. A & Miller St., Newark, N. J.
Reliance Mfg. Co., The, Massillon, Ohio.

**LOCOMOTIVE CRANES—See CRANES (Locomotives)**

**LOCOMOTIVES (Electric)**
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.
General Electric Co., Schenectady, N. Y.
Whitcomb, Geo. D., Co., Rochelle, Ill.

**LOCOMOTIVES (Gasoline)**
Whitcomb, Geo. D., Co., Rochelle, Ill.

**LOCOMOTIVES (Storage Battery)**
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

**LUBRICANTS**
Texas Co., The, 17 Battery Place, New York City.

**LUMBER (Creosoted or Zinc Treated)**
Century Wood Preserving Co., 1738 Koppers Bldg., Pittsburgh.

**MACHINE WORK**
Air Tight Steel Tank Co., Mansion and Gloster Sts., Pittsburgh, Pa.
Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.
Johnson, Carlyle, Machine Co., The Manchester, Conn.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.

**MACHINERY (Special)**
Aetna-Standard Engineering Co., The, Youngstown, O.
Allis-Chalmers Mfg. Co., Milwaukee, Wis.
Bethlehem Steel Co., Bethlehem, Pa.
Lewis Foundry & Machine Co., Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Nilson, A. H., Machine Co., Bridgeport, Conn.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
Whiting Corp., Harvey, Ill.

**MAGNETIC SEPARATORS—See SEPARATORS (Magnetic)**

**MAGNETS (Lifting)**
Cutler-Hammer, Inc., Milwaukee.
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.
Ohio Electric & Controller Co., 5900 Maurice Ave., Cleveland, O.

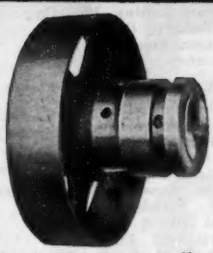
**MAGNESITE (Dead Burned)**
General Refractories Co., 106 S. 16th St., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bk. Bldg., Pittsburgh.

**MANGANESE METALS**
American Manganese Steel Co., Chicago Heights, Ill.
Electro Metallurgical Sales Corp., 30 E. 42nd St., New York City.

**MANGANESE ORE**
Lavino, E. J., & Co., Bullitt Bldg., Philadelphia, Pa.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

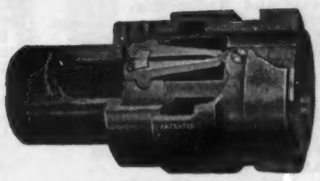
**See Index to Advertisements for Pages Containing Advertisements of Companies Listed Above**

# THE JOHNSON FRICTION CLUTCH



Single Clutch with Pulley

SPEED UP YOUR PRODUCTION with a JOHNSON— the Clutch with a MIGHTY GRIP that is CONSTANT till released.



Single Clutch—Sectioned

*WRITE FOR CATALOG "WHITE—12"*

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

# PITTSBURGH ROLLS CORPORATION

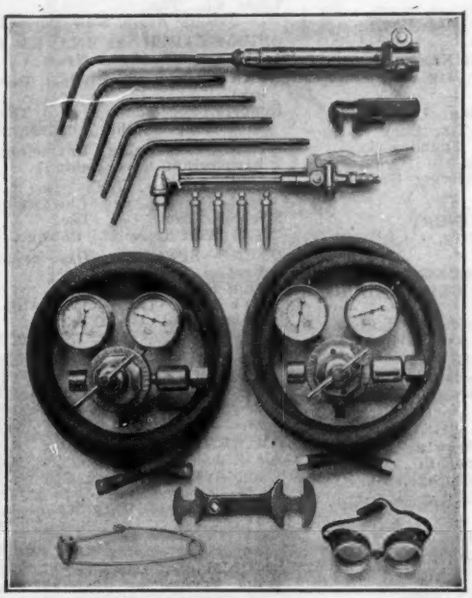
PHOENIX SAND ROLLS

PHOENIX CHILL ROLLS

PHOENIX STEEL ROLLS

PHOENIX METAL ROLLS

An Airco-Davis-Bournonville Combination Welding and Cutting Outfit No. 8888



A New Line—

Highly Efficient—

Low Priced—

## AIR REDUCTION SALES COMPANY

Manufacturers and distributers of Airco Oxygen, Airco Acetylene, Airco National Carbide
Airco-Davis-Bournonville Welding and Cutting Apparatus and Welding Supplies

| | | | | |
|---|---|---|---|---|
| Baltimore | Chicago | | Louisville | Portland, Ore. |
| Bettendorf, Ia. | Cleveland | | Milwaukee | |
| Birmingham | Dayton | | Minneapolis | Richmond |
| Boston | Detroit | | New Orleans | Seattle |
| Buffalo | Emeryville, Cal. | | OklahomaCity | St. Louis |
| Charlotte, N. C. | Jersey City | | Philadelphia | Wheeling |
| | Los Angeles | | Pittsburgh | |

*Home Office:* 342 Madison Ave., New York City, N. Y.

88 Plants — 25 District Offices

# The "Toledo" Double Crank Presses

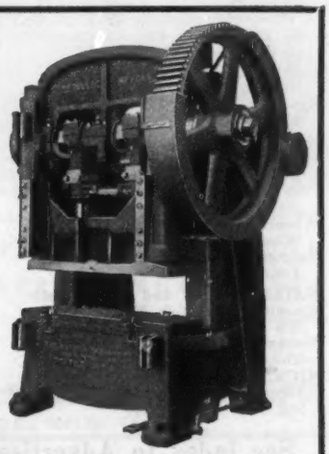
*With Overhanging or Gap Frames*

Built in several widths, and is adapted for a general line of multiple punching, shearing, blanking and forming on a wide range of sheet and bar metal work; for operating perforating dies for automobile brake bands, linings, frame cross channels, tank and windmill frames, etc.

They are conspicuous for sturdy, well balanced construction, long life and accurate, economical performance.

*Over two thousand patterns from which to choose.*

*Presses for Every Purpose*



**The Toledo Machine & Tool Co., Toledo, Ohio**

*Engineers, Founders and Machinists on Equipment for Sheet Metal Products*

Chicago Office: 549 West Washington Blvd. Detroit Office: Room 3—250 General Motors Bldg.

**MANIFOLDS (Oxygen)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**MATERIAL HANDLING MACHINERY**
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.
Webster and Weller Mfg. Co's., 1856 No. Kostner Ave., Chicago.

**METAL (Perforated)—See PERFORATED METAL**

**METAL CLEANERS**
American Chemical Paint Co., Ambler, Pa.
Ford, The J. B., Co., Wyandotte, Mich.

**METAL SPECIALTIES AND PARTS**
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Mundt, Chas., & Sons, Johnston and Fairmount Aves., Jersey City, N. J.

**METAL STAMPINGS—See STAMPINGS**

**METAL WORKING MACHINES—See SHEET METAL WORKING MACHINERY**

**METALS (Nonferrous)**
Titanium Alloy Mfg. Co., Niagara Falls, N. Y.

**METERS (Gas and Air)**
Cutler-Hammer, Inc., Milwaukee.

**MICROMETERS**
Brown & Sharpe Mfg. Co., Providence, R. I.

**MILLING MACHINES**
Brown & Sharpe Mfg. Co., Providence, R. I.

**MILLS (Blooming, Universal, Plate, Sheet, Tin, Bar)**
National Roll & Foundry Co., Avonmore, Pa.
Treadwell Engineering Co., Easton, Pa.

**MINING MACHINERY**
Allis-Chalmers Mfg. Co., Milwaukee, Wis.

**MIXING, KNEADING, TEMPERING AND PUGGING MACHINERY**
Bartlett, C. O., & Snow Co., 6203 Harvard Ave., Cleveland, O.

**MOLDING MACHINES**
Herman Pneumatic Machinery Co., 806 Union Bank Bldg., Pittsburgh, Pa.

**MOLDING MACHINES (Tractor Type Sand Throwing)**
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

**MOLDS (Ingot)—See INGOT MOLDS**

**MONEL METAL**
International Nickel Co., 67 Wall St., New York City.

**MONORAIL SYSTEMS**
Box Crane & Hoist Corp., Janney & E. Ontario St., Philadelphia.
Cleveland Electric Tramrail, Division of the Cleveland Crane & Engineering Co., Wickliffe, O.

**MOTORS (Electric)**
Century Electric Co., 1806 Pine Ave., St. Louis, Mo.
Crocker-Wheeler Electric Mfg. Co., Ampere, N. J.
Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago.
General Electric Co., Schenectady, N. Y.
Lincoln Electric Co., The, Coit Rd. and Kirby Ave., Cleveland, O.
Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa.

**MUCK BAR**
Bethlehem Steel Co., Bethlehem, Pa.
Samuel, Frank, & Co., Harrison Bldg., Philadelphia, Pa.

**NAILS**
Bethlehem Steel Co., Bethlehem, Pa.
Pittsburgh Steel Co., P. O. Box 72, Pittsburgh, Pa.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

**NAILS (Coated and Galvanized)**
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Youngstown Sheet & Tube Co., The, Youngstown, O.

**NICKEL**
International Nickel Co., 67 Wall St., New York City.

**NICKEL STEEL (Cold Drawn)**
Bethlehem Steel Co., Bethlehem, Pa.

**NITROGEN (Gas)**
Linde Air Products Co., 30 E. 42nd St., New York City.

**NUTS**
Bethlehem Steel Co., Bethlehem, Pa.
Clark Bros. Bolt Co., Milldale, Conn.
Cleveland Cap Screw Co., The, 2921 E. 79th St., Cleveland, O.
Foster Bolt & Nut Mfg. Co., Union Ave., at E. 72nd St., Cleveland, O.
Lake Erie Bolt & Nut Co., 915 E. 63rd St., Cleveland, O.
Neely Nut & Bolt Co., 2101 Wharton St., Pittsburgh.
Oliver Iron & Steel Corp., S. 10th and Muriel Sts., Pittsburgh, Pa.
Republic Iron & Steel Co., Youngstown, O.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Co., 220 Mill St., Rockford, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Wrought Iron Co. of America, Lebanon, Pa.

**OILS AND GREASES**
Texas Co., The, 17 Battery Place, New York City.

**OPEN-HEARTH FURNACES—See FURNACES (Open Hearth)**

**OVENS (Coke, By-Product Recovery)**
Koppers Construction Co., The, 1301 Koppers Bldg., Pittsburgh.

**OVENS (Japanning, Enameling, Lacquering, Core Baking)**
Drying Systems, Inc., 1814 Foster Ave., Chicago, Ill.
Maehler, Paul, Co., The, 2210 West Lake St., Chicago, Ill.

**OVENS—SPECIAL (Gas or Oil Heat)**
Drying Systems, Inc., 1814 Foster Ave., Chicago, Ill.
Maehler, Paul, Co., The, 2210 West Lake St., Chicago, Ill.

**OXY-ACETYLENE WELDING AND CUTTING—See WELDING AND CUTTING APPARATUS AND SUPPLIES (Oxy-Acetylene Process)**

**OXYGEN IN CYLINDERS**
Air Reduction Sales Co., 342 Madison Ave., New York City.
Linde Air Products Co., 30 E. 42nd St., New York City.

**PERFORATED METAL**
Chicago Perforating Co., 2445 W. 24th Place, Chicago, Ill.
Erdle Perforating Co., 171 York St., Rochester, N. Y.
Harrington & King Perforating Co., The, 5634 Fillmore St., Chicago.
Hendrick Mfg. Co., 43 Dundaff St., Carbondale, Pa.
Mundt, Chas., & Sons, Johnston and Fairmount Ave., Jersey City, N. J.

**PICKLE ROOM EQUIPMENT**
Weaver Bros. Co., Adrian, Mich.

**PICKLING COMPOUND**
American Chemical Paint Co., Ambler, Pa.
Hearne, William M., Inc., Real Estate Trust Bldg., Philadelphia.

**PICKLING MACHINES**
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.

**PICKLING TANKS**
Hauser Stander Tank Co., Cincinnati, Ohio.

**PIG IRON**
Alan Wood Steel Co., Conshohocken, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Chateaugay Ore & Iron Co., 26 Liberty St., New York City.
Cleveland-Cliffs Iron Co., Union Trust Bldg., Cleveland, O.
Donner Steel Co., Inc., P. O. Box 1000, Buffalo, N. Y.
Eaton, Rhodes & Co., First National Bank Bldg., Cincinnati, O.
Globe Iron Co., Jackson, O.
Hanna, The M. A., Co., Leader Bldg., Cleveland, O.
Illinois Steel Co., 208 So. LaSalle St., Chicago, Ill.
Pickands, Mather & Co., Union Trust Bldg., Cleveland, O.
Pilling & Co., Inc., 1500 Chestnut St., Philadelphia, Pa.
Republic Iron & Steel Co., Youngstown, O.
Rogers Brown & Crocker Bros., Inc., 21 E. 40th St., New York.
Snyder, W. P., & Co., Oliver Bldg., Pittsburgh, Pa.
Valley Mould & Iron Corp., Hubbard, Ohio.

**PIG IRON (Charcoal)**
Superior Charcoal Iron Co., Grand Rapids, Mich.

**PILING (Iron and Steel)**
Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Wemlinger, Inc., 149 Broadway, New York City.

**PINIONS—See GEARS AND GEAR CUTTING**

**PIPE (Acid Resisting)**
Duriron Co., Inc., The, Dayton, O.

**PIPE (Brass, Bronze and Copper)**
American Brass Co., 25 Broadway, New York City.

**PIPE (Seamless Steel and Seamless Iron)**
Babcock & Wilcox Tube Co., 85 Liberty St., New York City.
Giberson, E. D., & Co., Inc. 40 Rector St., New York City.

**PIPE (Steel)**
Babcock & Wilcox Tube Co., 85 Liberty St., New York City.
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh.
Michigan Steel Tube Products Co., Holbrook & Buffalo Sts., Detroit, Mich.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Petroleum Iron Works Co., The, Sharon, Pa.
Pittsburgh Steel Products Co., Union Trust Bldg., Pittsburgh.
Republic Iron & Steel Co., Youngstown, O.
Wheeling Steel Corp., Wheeling, W. Va.
Youngstown Sheet & Tube Co., Youngstown, O.

**PIPE (Wrought Iron)**
Reading Iron Co., Reading, Pa.

**PIPE (Wrought Steel)**
National Tube Co., Frick Bldg., Pittsburgh, Pa.

**PIPE CUTTING & THREADING MACHINERY**
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
Landis Machine Co., Waynesboro, Pa.

**PIPE FITTINGS**
Pittsburgh Piping & Equipment Co., 43rd St. and A. V. R. R., Pittsburgh, Pa.

**PIPE MILL MACHINERY**
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

**PIPE STRAIGHTENING MACHINERY**
Aetna-Standard Engineering Co., The, Youngstown, Ohio.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Wis.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.
Taylor-Wilson Mfg. Co., McKees Rocks, Pa.

**PIPING**
Pittsburgh Piping & Equipment Co., 43rd St. and A. V. R. R., Pittsburgh, Pa.

**PIPING CONTRACTORS**
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Power Piping Co., 829 Beaver Ave., Pittsburgh, Pa.

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**PLANERS (Traveling Head)**
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**PLANERS AND SHAPERS**
Ryerson, Jos. T., & Son, Inc. 16th and Rockwell Sts., Chicago.

**PLATE CASTORS**
Hyatt Roller Bearing Co., Harrison, N. J.

**PLATES (Iron and Steel)**
American Rolling Mill Co., Middletown, O.
Bethlehem Steel Co., Bethlehem, Pa.

**PLATES (Rolled Steel—Floor)**
Alan Wood Steel Co., Conshohocken, Pa.
American Pressed Steel Co., Commercial Trust Bldg., Philadelphia, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Iron & Steel Co., Harrisburg, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.

**PLATES (Sheared and Universal)**
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Bethlehem Steel Co., Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Central Iron & Steel Co, Harrisburg, Pa.
Granite City Steel Co., The, Granite City, Ill.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Illinois Steel Warehouse Co., 1219 Wabansia Ave., Chicago, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Ryerson, Joseph T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Youngstown Sheet & Tube Co., Youngstown, O.

**PLATES (Terne and Tin)—See TIN PLATE**

**PNEUMATIC TOOLS—See TOOLS (Pneumatic)**

**POLE LINE HARDWARE**
Oliver Iron & Steel Corp., S. 10th and Muriel, Pittsburgh.

**POLES (Tubular Steel)**
National Tube Co., Frick Bldg., Pittsburgh, Pa.

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Ferro Enamel Supply Co., Keith Bldg., Cleveland, O.

**PORCELAIN ENAMELS**
Ferro Enamel Supply Co., Keith Bldg., Cleveland, O.

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**POTS (Salt, Lead, Cyanide)**
Case Hardening Service Co., 2280 Scranton Rd., Cleveland, O.

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Fuller-Lehigh Co., Fullerton, Pa.

**PREHEATERS**
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Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.
Combustion Engineering Corp., 200 Madison Ave., New York City.

**PREHEATING APPARATUS**
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**PRESSED METAL—See STAMPINGS**

**PRESSED STEEL PARTS—see STAMPINGS**

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Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.
Erie Foundry Co., Erie, Pa.
Logemann Bros. Co., 3126 Burleigh St., Milwaukee, Wis
Niagara Machine & Tool Works, 685 Northland Ave., Buffalo, N. Y.
Toledo Machine & Tool Co., Toledo, O.

**PRESSES (Die Cutting)**
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**PRESSES (Forging)**
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
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Farrel-Birmingham Co., Inc., Ansonia, Conn.
Farrel-Birmingham Co., Inc., 344 Vulcan St., Buffalo, N. Y.
Logemann Brothers Co., 3126 Burleigh St., Milwaukee, Cis.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Morgan Engineering Co., Alliance, O.
Wood, R. D., & Co., 400 Chestnut St., Philadelphia.

**PRESSES (Metal Drawing, Etc.)**
Bliss, E. W., Co., 53rd St. and 2nd Ave., Brooklyn, N. Y.

**PRESSES (Scrap Bundling and Baling)**
Logemann Brothers Co., 3126 Burleigh St., Milwaukee. Wis.

**PRESSES (Straightening)**
United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.

**PRODUCER GAS SYSTEMS—See GAS PRODUCER PLANTS**

**PULVERIZING, CRUSHING & GRINDING MACHINERY—See CRUSHING, GRINDING & PULVERIZING MACHINERY**

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Fairbanks, Morse & Co., 900 S. Wabash Ave., Chicago.

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Duriron Co., Inc., The, Dayton, Ohio.

**PUMPS (Air Lift)**
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Ingersoll-Rand Co., (Cameron). 11 Broadway, New York City.

**PUMPS (Centrifugal)**
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**PUMPS (Hand and Power)**
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**PUMPS (Hydraulic)**
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Ingersoll-Rand Co., (Cameron), 11 Broadway, New York City.

**PUMPS (Vacuum & Dry)**
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Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.

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Beatty Machine & Mfg. Co., Hammond, Ind.
Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave. Cleveland, O.
Long & Allstatter Co., Hamilton, O.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Thomas Spacing Machine Co., Fulton Bldg., Pittsburgh, Pa.

**PURIFIERS (Steam)**
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

**RAILS**
Carnegie Steel Co., 431 Carnegie Bldg., Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.
Tennessee Coal, Iron & Railroad Co., Brown-Marx Bldg., Birmingham, Ala.

**RAILS (Girder)**
Bethlehem Steel Co., Bethlehem, Pa.

**REAMERS**
Cleveland Twist Drill Co., 1242 E. 49th St., Cleveland, O.

**REFRACTORIES**
Babcock & Wilcox Co., 95 Liberty St., New York City.
Carborundum Co., The, Perth Amboy, N. J.
Climax Fire Brick Co., Climax, Pa.
Evens & Howard Fire Brick Co., 920 Market St., St. Louis, Mo.
General Refractories Co., 106 S. 16th., Philadelphia, Pa.
Harbison-Walker Refractories Co., Farmers Bk. Bldg., Pittsburgh.
Illinois Clay Products Co., 214 Barber Bldg., Joliet, Ill.
Kier Fire Brick Co., Oliver Bldg., Pittsburgh, Pa.
Laclede-Christy Clay Products Co., Ambassador Bldg., St. Louis, Mo.
Lavino, E. J., Co., Bullitt Bldg, Philadelphia, Pa.
North American Refractories Co., 1012 National City Bank, Cleveland, Ohio.
Norton Co., Worcester, Mass.
Stowe-Fuller Refractories Co., The, 1650 Union Trust Bldg., Cleveland, O.
Taylor, Chas., Sons Co., The, 715 Burns St., Cincinnati, O.
U. S. Refractories Corp., Mt. Union, Pa.

**REGISTERS (Heating and Ventilating)**
Auer Register Co., The, 3608 Payne Ave., Cleveland, O.

**REGULATORS (Compressed Gas)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**REGULATORS (Pressure)**
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.

**RESISTORS (Edgewound)**
Clark Controller Co., The, 1146 E. 152nd St., Cleveland, O.

**RHEOSTATS**
Electric Controller & Mfg. Co., 2698 E. 79th St., Cleveland, O.

**RINGS (Steel)**
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**RINGS (Weldless)**
Milwaukee Forge & Machine Co., Milwaukee, Wis.

**RIVETERS (Pneumatic)**
Cleveland Pneumatic Tool Co., 3734 E. 78th St., Cleveland, O.
Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.

**RIVETING MACHINERY**
Hanna Engineering Works, 1766 Elston Ave., Chicago, Ill.
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Cleveland Punch & Shear Works Co., The, 3917 St. Clair Ave., Cleveland, O.

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**RIVETS**
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Neely Nut & Bolt Co., 2101 Wharton St., Pittsburgh, Pa.
Oliver Iron & Steel Corp., S. 10th and Muriel Sts., Pittsburgh, Pa.
Progressive Mfg. Co., Torrington, Conn
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Ryerson, Joseph T., & Son, Inc., 16th and Rockwell Sts., Chicago.
Wrought Iron Co. of America, Lebanon, Pa.

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**RODS (Brass, Bronze, Copper and Nickel Silver)**
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**RODS (Drill)**
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Pittsburgh Tool Steel Wire Co., Monaca, Pa.
Vanadium-Alloys Steel Co., Latrobe, Pa.

**RODS (Iron and Steel)**
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**RODS (Rounds, Flats & Shapes)**
Washburn Wire Co., Phillipsdale, R. I.

**RODS (Welding)—See WELDING RODS**

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Kinnear Manufacturing Co., 818-868 Field Ave., Columbus, O.
Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

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Norma-Hoffmann Bearings Corp., Stamford, Conn.

**ROLLING MILL EQUIPMENT**
Alliance Machine Co., The, Alliance, O.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Bliss, E. W., Co., 53rd St and 2nd Ave., Brooklyn, N. Y.
Hyde Park Foundry & Machine Co., Hyde Park, Pa.
Lewis Foundry & Machine Co., Pittsburgh, Pa.
Mackintosh-Hemphill Co., Penn Ave. at Water St., Pittsburgh, Pa.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass
Morgan Engineering Co., Alliance, O.
National Roll & Foundry Co., Avonmore, Pa.
Sutton Engineering Co., Park Bldg., Pittsburgh, Pa.
Treadwell Engineering Co., Easton, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.
Wean Engineering Co., Inc., The, 2nd Nat. Bank Bldg., Warren, O.

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Duquesne Steel Foundry Co., Union Bank Bldg., Pittsburgh, Pa.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.

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American Adamite Co., The, 410 Oliver Bldg., Pittsburgh, Pa.
Bethlehem Steel Co., Bethlehem, Pa.
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Dusquesne Steel Foundry Co. Union Bank Bldg., Pittsburgh, Pa.
Heppenstall Co., 47th & Hatfield, Pittsburgh, Pa.
Hyde Park Foundry & Machine Co., Hyde Park, Pa.
Mackintosh-Hemphill Co., Penn Ave. at Water St., Pittsburgh, Pa.
Mesta Machine Co., P. O. Box 1124, Pittsburgh, Pa.
Midvale Co., The, Nicetown, Philadelphia, Pa.
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Pittsburgh Rolls Corp., 41st St. and A. V. R. R., Pittsburgh, Pa.
United Engineering & Foundry Co., Farmers Bk. Bldg., Pittsburgh.

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American Sheet & Tin Plate Co., Frick Bldg., Pittsburgh, Pa.
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Empire Steel Corp., Mansfield, Ohio.
Granite City Steel Co., Granite City, Ill.
Inland Steel Co., First National Bank Bldg., Chicago, Ill.
Republic Iron & Steel Co., Youngstown, O.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co., Youngstown, Ohio.

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Detrick, M. H., Co., 140 S. Dearborn St., Chicago.

**RUSTLESS IRON**
Rustless Iron Corp. of America, Chanin Bldg., 122 E. 42nd St., New York City.

**RUST REMOVING COMPOUND**
American Chemical Paint Co., Ambler, Pa.

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National Tube Co., Frick Bldg., Pittsburgh, Pa.

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**SAND (Molding)**
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Beardsley & Piper Co., The, 2541 No. Keeler Ave., Chicago, Ill.
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

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Beardsley & Piper Co., The, 2541 N. Keeler Ave., Chicago, Ill.
Link-Belt Co., 300 W. Pershing Road, Chicago, Ill.
National Engineering Co., 549 W. Washington Blvd., Chicago, Ill.

**SAND SLINGERS**
Beardsley & Piper Co., 2541 N. Keeler Ave., Chicago, Ill.

**SASH (Steel)**
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**SAWS High Speed Cut-Off Machines)**
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**SAWS (Hot & Cold, Tube & Rail)**
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.

**SAWS (Inserted Tooth)**
Hunter Saw & Machine Co., 5656 Butler St., Pittsburgh, Pa.

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United Engineering & Foundry Co., Farmers Bank Bldg., Pittsburgh.

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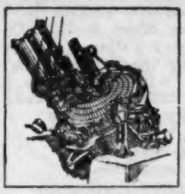

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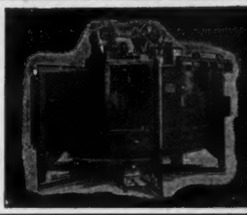

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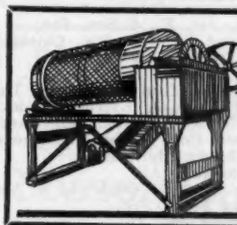

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Shuster, The F. B., Co.,
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Sutton Engineering Co.,
Park Bldg., Pittsburgh, Pa.

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Treadwell Engineering Co.,
Easton, Pa.

**STRIP STEEL (Precision)**
Cold Metal Process Co., The,
1200 City Bank Bldg.,
Youngstown, O.

**STRUCTURAL IRON AND STEEL WORK — See STEEL (Structural)**

**SULPHURIC ACID**
Cleveland-Cliffs Iron Co.,
Union Trust Bldg., Cleveland.

**SWITCH STANDS**
Bethlehem Steel Co.,
Bethlehem, Pa.

**SWITCHES (Electric)**
Electric Controller & Mfg. Co., The, 2698 E. 79th St., Cleveland.
Shepard Niles Crane & Hoist Corp., 358 Schuyler Ave.,
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Pittsburgh, Pa.
Petroleum Iron Works Co., The,
Sharon, Pa.
Riter-Conley Co., 1207 Oliver Bldg., Pittsburgh, Pa.
Scaife, Wm. B., & Sons Co.,
Oakmont, Pa.
Steel Plate Products Co.,
Pottstown, Pa.

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Cincinnati, O.

**TANKS—WOOD OR STEEL (Rubber or Lead Lined)**
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**TAPS (Collapsible)**
National Acme Co., E. 131st St. & Coit Rd., Cleveland, O.

**TAPS AND DIES**
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Waynesboro, Pa.

**TERNE PLATE—See TIN PLATE**

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**TIES (Creosoted)**
Century Wood Preserving Co.,
1738 Koppers Bldg., Pittsburgh.

**TIN PLATE**
American Sheet & Tin Plate Co.,
Frick Bldg., Pittsburgh, Pa.
Bethlehem Steel Co.,
Bethlehem, Pa.
Granite City Steel Co., The,
Granite City, Ill.
Weirton Steel Co., Weirton, W. Va.
Youngstown Sheet & Tube Co.,
Youngstown, O.

**TIN PLATE MACHINERY**
Aetna-Standard Engineering Co., The, Youngstown, O.
Wean Engineering Co., Inc., The,
2nd Nat. Bank Bldg., Warren, O.

**TITANIUM**
Titanium Alloy Mfg. Co.,
Niagara Falls, N. Y.

**TOOL BITS (High Speed)**
Firth-Sterling Steel Co.,
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**TOOL BITS (Stellite)**
Haynes-Stellite Co.,
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**TOOLS (Pneumatic)**
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3734 E. 78th St., Cleveland, O.
Ingersoll-Rand Co.,
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Pittsburgh, Pa.
Pittsburgh Steel Products Co.,
Union Trust Bldg., Pittsburgh.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Roller Bearing Co., The,
Canton, O.
Tyler Tube & Pipe Co., The,
Washington, Pa.

**TUBES (Alloy)**
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Brackenridge, Pa.
Babcock & Wilcox Tube Co.,
85 Liberty St., New York City.

**TUBES (Boiler)**
Babcock & Wilcox Tube Co.,
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Bethlehem Steel Co.,
Bethlehem, Pa.
Giberson, E. D., & Co., Inc.,
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National Tube Co., Frick Bldg.,
Pittsburgh, Pa.
Pittsburgh Steel Products Co.,
Union Trust Bldg., Pittsburgh.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tyler Tube & Pipe Co., The,
Washington, Pa.

**TUBES (Brass and Copper)**
Wolverine Tube Co.,
1411 Central Ave., Detroit, Mich.

**TUBES (Charcoal Iron Boiler)**
Bethlehem Steel Co.,
Bethlehem, Pa.

**TUBES (Cold Drawn Seamless Steel)**

Giberson, E. D., & Co., Inc.,
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Pittsburgh, Pa.
Pittsburgh Steel Products Co.,
Union Trust Bldg., Pittsburgh.
Summerill Tubing Co.,
Bridgeport, Pa.
Timken Roller Bearing Co., The,
Canton, O.
Ward's, Edgar T., Sons Co.,
(Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.

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Watervliet, N. Y.

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Oxweld Acetylene Co., 30 E. 42nd St., New York City.

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Magee Bldg., Pittsburgh, Pa.

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Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
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Wood, R. D. & Co., 400 Chestnut St., Philadelphia, Pa.

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3734 E. 78th St., Cleveland, O.

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**VANADIUM**
Electro Metallurgical Sales Corp.,
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Vanadium Corp. of America,
120 Broadway, New York City.

**VIADUCTS (Steel—See BRIDGES BUILDINGS, VIADUCTS, STACKS (Steel)**

**WALKAWAYS (Open Steel) — See FLOORING-STEEL (Ventilating, Nonslipping, Fireproof)**

**WALLS (Sectional Air Cooled)**
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140 S. Dearborn St., Chicago, Ill.

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Illinois Steel Warehouse Co., 1319 Wabansia Ave., Chicago, Ill.
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Union Drawn Steel Co.,
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Ward's, Edgar T., Sons Co.,
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American Nut & Bolt Fastener Co., The, 2029 Doerr St., Pittsburgh.
Beall Tool Co., East Alton, Ill.
Bethlehem Steel Co.,
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Joliet Wrought Washer Co.,
Joilet, Ill.
Mansfield Lock Washer Co.,
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National Lock Washer Co., The,
40 Hermon St., Newark, N. J.
Positive Lock Washer Co., The, Ave. A & Miller St., Newark, N. J.
Reliance Mfg. Co., The,
Massillon, Ohio.

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Drying Systems, Inc.,
1814 Foster Ave., Chicago, Ill.
Maehler, Paul Co., The,
2210 West Lake St., Chicago, Ill.

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**WATER COOLED EQUIPMENT (For Open Hearth Furnaces)**
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Scaife, Wm. B., & Sons Co.,
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Ashland, Ohio.

**WAX (Core, Wire Pattern, Vent)**
United Compound Co.,
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Kinkead, Robert E.,
3030 Euclid Ave., Cleveland, Ohio.

**WELDING (Forge & Hammer)**
Blaw-Knox Co., 602 Farmers Bank Bldg., Pittsburgh, Pa.

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Blaw-Knox Co., 602 Farmers Bk. Bldg., Pittsburgh.

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Lincoln Electric Co., The,
Coit Rd. & Kirby Ave., Cleveland.
Westinghouse Electric & Mfg. Co.,
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Wilson Welder & Metals Co.,
Wilson Bldg., Hoboken, N. J.

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Prest-O-Lite Co., Inc., The,
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Haynes Stellite Co.,
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American Steel & Wire Co.,
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Lincoln Electric Co., The, Coit Rd. & Kirby Ave, Cleveland, O.
Oxweld Acetylene Co.,
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Washburn Wire Co.,
Phillipsdale, R. I.
Wilson Welder & Metals Co,
Wilson Bldg. Hoboken, N. J.

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Bethlehem, Pa.
Carnegie Steel Co., 431 Carnegie Bldg, Pittsburgh, Pa.
Illinois Steel Co., 208 S. LaSalle St., Chicago, Ill.

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Moeschl-Edwards Const. Co., The, 120 W. 9th St., Covington, Ky.

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Bethlehem Steel Co.,
Bethlehem, Pa.
Pittsburgh Steel Co.,
P. O. Box 72, Pittsburgh, Pa.
Seneca Wire & Mfg. Co., The,
Fostoria, O.

**WIRE (Chrome Nickel)**
Ludlum Steel Co.,
Watervliet, N. Y.

**WIRE (Fence)**
American Steel & Wire Co., 208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co.,
Bethlehem, Pa.
Pittsburgh Steel Co.,
P. O. Box 72, Pittsburgh, Pa.

**WIRE (Music)**
Washburn Wire Co., Inc., 118th & Harlem River, New York City.

**WIRE (Round, Flat, Square and Special Shapes)**
American Steel & Wire Co.,
208 S. LaSalle St., Chicago, Ill.
Bethlehem Steel Co.,
Bethlehem, Pa.
Interstate Iron & Steel Co.,
104 S. Michigan Ave., Chicago, Ill.
Roebling's, John A., Sons Co.,
Trenton, N. J.
Seneca Wire & Mfg. Co., The,
Fostoria, O.
Washburn Wire Co., Inc., 118th & Harlem River, New York City.
Wheeling Steel Corp.,
Wheeling, W. Va.

**WIRE (Threaded)**
Progressive Mfg. Co.,
Torrington, Conn.

**WIRE (Welding)—See WELDING RODS**

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3571 E. 78th St., Cleveland, O.
Seneca Wire & Mfg. Co., The,
Fostoria, O.

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Cuyahoga Spring Co.,
10252 Berea Rd., Cleveland, O.
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Shuster, The F. B., Co.,
New Haven, Conn.
Sleeper & Hartley, Inc.,
Worcester, Mass.
Treadwell Engineering Co.,
Easton, Pa.
Vaughn Machinery Co.,
Cuyahoga Falls, O.

**WIRE NAIL MACHINERY**
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53rd St., Brooklyn, N. Y.
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**WIRE NAILS—See NAILS**

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**WIRE ROPE SLINGS**
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Trenton, N. J.

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**WIRE STRAIGHTENERS AND CUTTING MACHINES**
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Shuster, The F. B., Co.,
New Haven, Conn.

**WIRE, WIRE RODS & WIRE PRODUCTS**
Jones & Laughlin Steel Corp., Jones & Laughlin Bldg., Pittsburgh.
Titchener, E. H., & Co.,
Binghamton, N. Y.

**WIRE, WIRE RODS AND SPECIALTIES**
Titchener, E. H., & Co.,
Binghamton, N. Y.

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Electro Metallurgical Sales Corp.,
30 E. 42nd St., New York City.

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Volume 86
Number 3

IRON TRADE REVIEW

Cleveland, O.
Jan. 16, 1930

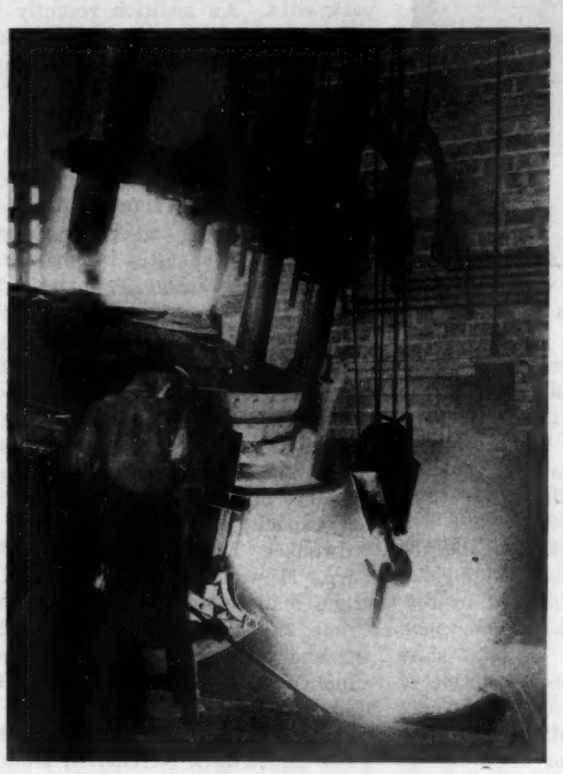

*Fig. 1—Tapping an electric furnace heat*

# Steel Foundry Centralizes Operations

## *Ohio Company for Which Failure Once Was Predicted Enjoys a Steady Growth*

*By Norman F. Hindle*

SANDUSKY is a beautiful and progressive city located in the northern part of Ohio on the shore of Lake Erie. It is a center of industrial activity with a variety of manufacturing concerns employing a large number of men. In this location the Farrell-Cheek Steel Foundry Co., had its beginning, and incorporated in 1910. The company had been incorporated in the state of Ohio with the following officers: Herbert Farrell, president; John E. Sweet, secretary and purchasing agent; H. B. Castleman, treasurer; T. A. Martin, superintendent; Martin L. Ritter, sales manager, and F. P. Murschel, production manager. The first foundry building was 100 x 100 feet and was put in operation on Oct. 13, 1910. Since that time the company has grown and expanded gradually. The fact that its original manufacturing area covered a total of 10,000 square feet and that its present space comprises a total of 80,000 square feet gives some idea of the growth of the company.

When the plant first was placed in operation, its failure was predicted by many. Trials such as irregular labor, workmen not skilled in steel foundry practice, business depressions, etc., caused the people of the town to view the new industry with apprehension. However, the men at the head of the organization had faith in their business and that faith since has been justified.

The first jobs made by the company were small steel castings. The firm has continued to specialize in that class of work to the present time. The range of work is from a few pounds to approximately 500 pounds, but special castings are produced which weigh as much as 1000 pounds each.

The company has developed a specially alloyed steel which it manufactures and with this steel and its carbon steels specializes in castings for road machinery, construction machinery, and such equipment as shovel buckets, crawler wagons, scrapers, loaders, tractors, pavers, conveyors, etc.

The plant is located on the east side of the city and consists of an office building, main foundry building, machine shop, sidings, and storage yard for raw materials and flasks. A

**TOWERS (Transmission)**
American Bridge Co.,
71 Broadway, New York City.
Pacific Coast Steel Co., Hunter-Dulin Bldg., San Francisco.

**TRAMRAILS**
Cleveland Electric Tramrail, Division of the Cleveland Crane and Engineering Co., Wickliffe, O.
Harnischfeger Corp., 3811 National Ave., Milwaukee, Wis.
Whiting Corp., Harvey, Ill.

**TREADS (Safety Stair and Ladder)—See GRATING (Non-Slipping)**

**TROLLEYS**
Hanna Engineering Works,
1766 Elston Ave., Chicago, Ill.
Roeper Crane & Hoist Works,
1729 N. 10th St., Reading, Pa.
Shepard Niles Crane & Hoist Corp.,
358 Schuyler Ave.,
Montour Falls, N. Y.

**TRUCKS (Welding)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**TRUCKS AND TRACTORS (Electric Industrial)**
Atlas Car & Mfg. Co., 1140 Ivanhoe Rd., Cleveland, O.

**TRUCKS & TRACTORS (Gasoline, industrial)**
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Battle Creek, Mich.

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Mackintosh-Hemphill Co.,
Penn Ave. at Water St.,
Pittsburgh, Pa.
Treadwell Engineering Co.,
Easton, Pa.
United Engineering & Foundry Co.,
Farmers Bk. Bldg., Pittsburgh.

**TUBES**
Babcock & Wilcox Tube Co.,
85 Liberty St., New York City.
Michigan Steel Tube Products Co.,
Holbrook and Buffalo Sts.,
Detroit, Mich.
National Tube Co., Frick Bldg.,
Pittsburgh, Pa.
Pittsburgh Steel Products Co.,
Union Trust Bldg., Pittsburgh.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Timken Roller Bearing Co., The,
Canton, O.
Tyler Tube & Pipe Co., The,
Washington, Pa.

**TUBES (Alloy)**
Allegheny Steel Co.,
Brackenridge, Pa.
Babcock & Wilcox Tube Co.,
85 Liberty St., New York City.

**TUBES (Boiler)**
Babcock & Wilcox Tube Co.,
85 Liberty St., New York.
Bethlehem Steel Co.,
Bethlehem, Pa.
Giberson, E. D., & Co., Inc.,
40 Rector St., New York City.
National Tube Co., Frick Bldg.,
Pittsburgh, Pa.
Pittsburgh Steel Products Co.,
Union Trust Bldg., Pittsburgh.
Ryerson, Jos. T., & Son, Inc., 16th and Rockwell Sts., Chicago, Ill.
Tyler Tube & Pipe Co., The,
Washington, Pa.

**TUBES (Brass and Copper)**
Wolverine Tube Co.,
1411 Central Ave., Detroit, Mich.

**TUBES (Charcoal Iron Boiler)**
Bethlehem Steel Co.,
Bethlehem, Pa.

**TUBES (Cold Drawn Seamless Steel)**

Giberson, E. D., & Co., Inc.,
40 Rector St., New York City.
National Tube Co., Frick Bldg.,
Pittsburgh, Pa.
Pittsburgh Steel Products Co.,
Union Trust Bldg., Pittsburgh.
Summerill Tubing Co.,
Bridgeport, Pa.
Timken Roller Bearing Co., The,
Canton, O.
Ward's, Edgar T., Sons Co.,
(Div. Columbia Steel & Shafting Co.), Pittsburgh, Pa.

**TUBES (Lap-Welded Boiler)**
Bethlehem Steel Co.,
Bethlehem, Pa.

**TUBES (Seamless Iron)**
Babcock & Wilcox Tube Co.,
85 Liberty St., New York City.

**TUBES (Welded Steel)**
Michigan Steel Tube Products Co.,
Buffalo St., Detroit, Mich.
Tubeweld, Inc.,
Oakland & Manchester Aves.,
Detroit, Mich.

**TUNGSTEN CARBIDE**
Carboloy Co.,
350 Madison Ave., New York City.
Haynes Stellite Co.,
30 E. 42nd St., New York City.
Ludlum Steel Co.,
Watervliet, N. Y.

**TURBINES (Steam)**
Allis-Chalmers Mfg. Co.,
Milwaukee, Wis.
Westinghouse Electric & Mfg. Co.,
E. Pittsburgh, Pa.

**TURBO BLOWERS — See BLOWERS**

**TURNBUCKLES**
Merrill Brothers, Maspeth, N. Y.

**TURNTABLES**
American Bridge Co., 71 Broadway, New York City.

**TWIST DRILLS—See DRILLS**

**VALVES (Back Pressure)**
Oxweld Acetylene Co., 30 E. 42nd St., New York City.

**VALVES (Gas)**
Bailey, Wm. M., Co.,
Magee Bldg., Pittsburgh, Pa.

**VALVES (Gas and Air Reversing)**
Blaw-Knox Co., 632 Farmers Bank Bldg., Pittsburgh, Pa.
Duff Patents Co., Inc., 321 Union Trust Bldg., Pittsburgh, Pa.
Morgan Construction Co.,
Worcester, Mass.

**VALVES (Hydraulic)**
Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.
Wood, R. D. & Co., 400 Chestnut St., Philadelphia, Pa.

**VALVES (Pneumatic)**
Cleveland Pneumatic Tool Co.,
3734 E. 78th St., Cleveland, O.

**VALVES AND FITTINGS**
Pittsburgh Piping & Equipment Co., 43rd St. & A. V. R. R.,
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40 Hermon St., Newark, N. J.
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Reliance Mfg. Co., The,
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International Oxygen Co.,
Newark, N. J.
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30 E. 42nd St., New York City.

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Lincoln Electric Co., The, Coit Rd. & Kirby Ave, Cleveland, O.
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Washburn Wire Co.,
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Wilson Welder & Metals Co,
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Pittsburgh Steel Co.,
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Seneca Wire & Mfg. Co., The,
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Seneca Wire & Mfg. Co., The,
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Washburn Wire Co., Inc., 118th & Harlem River, New York City.
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Titchener, E. H., & Co.,
Binghamton, N. Y.

**WIRE, WIRE RODS AND SPECIALTIES**
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Binghamton, N. Y.

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